



**THE
FIFTH
LACUS
FORUM
1978**



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THE FIFTH LACUS FORUM 1978

edited by Wolfgang Wölck
and Paul L. Garvin



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INTRODUCTION

The Fifth Forum of the Linguistic Association of Canada and the United States (LACUS) was hosted by the State University of New York at Buffalo on its new Amherst Campus from August 9 to 13, 1978. The choice of Buffalo was doubly appropriate because of its location on the U.S.-Canadian border and between two of the Great Lakes. In addition to the customary attendance from all parts of Canada and the United States, this Forum enjoyed an increased participation by European members of the Association.

The papers from this meeting which were submitted to the editors in publishable form in time for inclusion are herein presented to the public. They are introduced by the annual address of the Association's current President, Kenneth Lee Pike. Two invited papers – the inaugural lecture by Rulon Wells and a special evening presentation at Buffalo State College by Robert Longacre – are included in thematically appropriate sections of the Proceedings.

It is traditional LACUS policy to encourage all theoretical and methodological approaches which are likely to bring linguistic problems closer to their solution. In keeping with this policy, the editors chose to pay attention to substantive issues and problem areas as an ordering principle for the papers rather than to theoretical tendencies or particular schools of thought. Stratificational, tagmemic and transformational-generative treatments are therefore grouped together under the particular subject matter with which they deal, rather than being arranged according to their theory and method. We made no attempt to apportion the articles into sections of equal size. Our choice of subject categories no doubt has contributed to the unequal size of the sections, but we believe that this reflects a noticeable concentration of current linguistic interest in specific areas on the one hand and a sensitivity on the part of our LACUS membership and officers toward representing current tendencies and fostering new directions on the other.

Special support for the Fifth LACUS Forum was received from the Offices of: the Dean of the Faculty of Social Sciences, the Director of Summer Sessions, the Director of the Council on International Studies, the Director of the Intensive English Language Institute and the Chairman of the Department of Linguistics, all at State University of New York at Buffalo, and of the President of the Niagara Linguistics Society.

Henry Sustakoski served on the Local Arrangements Committee together with the two editors of these Proceedings. Beth Carlock and Jonathan Webster assisted with conference arrangements, Suzi Murray was the ubiquitous and tireless Conference Secretary. To all the above-mentioned and to the many colleagues and students, mostly from the Linguistics Department at SUNY/Buffalo, who helped whenever needed to make this Forum a success, the LACUS membership owes their debt of gratitude.

The editors of this volume owe their thanks to Beth Carlock, Gun Oker-Blom, and Saleh Suleiman for help with copy-editing, and especially to Lily Panten, principal editorial assistant, on whose desk this volume was assembled.

Buffalo, Fall 1978

*Wolfgang Wölck
Paul L. Garvin*

1978 PRESIDENTIAL ADDRESS

LINGUISTICS--FROM THERE TO WHERE?

Kenneth L. Pike

Summer Institute of Linguistics, Inc.

Linguistics in the current decade is in an extremely fortunate position. It carries a great deal of flexibility which leaves room for the innovating scholar to open up new lines of research with some hope of getting a hearing, and for the "old-fashioned" scholar to bring his particular competence to bear upon problems recently coming to attention. We are living in an era exciting because of the wealth of ideas flooding us, while at the same time overwhelming us because of our ignorance as to how to utilize it.

Therefore I am attempting in this paper to let some of my younger colleagues, who did not live in the era within which I grew up, feel the current surge of growth and development as being on a continuum from the structuralist days of Bloomfield and Sapir--but heading into the next decade or two when scholars not as yet publishing will undoubtedly move our understanding far beyond our current outreach. (My emphasis is on continuity related to one area of development, rather than an attempt to sketch the whole field with its many current intertwining strands of ideas, or an attempt to take some current bit of data and to exploit its analysis.)

I. THE OBSERVER IN THE DATA

The description of this growth must receive its continuity from my own experience. And already, therefore, I have intruded myself as an observer of myself into the linguistic history of which I am myself a part. And already my own linguistic development is affecting me in this particular description. It brings observer into the historical data as part of that data. And it chooses to do so by means of that observer's viewpoint through the theoretical windows of particle, wave, and field, where wave refers to the surging growth and emergence of new ideas, where field shows the relationship between ideas of various types, and where particles are specific quasi-isolated elements, or descriptive bits, which can grow or be related to one another.

How did this perspective of man-in-his-description come about--and toward what goal does it seem to be pointing in the immediate or long-distant future in the hands of any who might be affected by this view?

It is difficult, in retrospect, to treat any era dispassionately--the issues which then seemed clear-cut are now blurred, and the interest which then was live may now be dead. This affects even a participant in that former scene, who may distort

it unintentionally by reading the now-obvious into the then-obscure (or the then-obvious into the now-obscure!). In order to lessen this danger a bit (not to eliminate it) I have checked over carefully a booklet called Live Issues in Descriptive Linguistics written with my sister Eunice in 1955, in which we listed a series of topics, each followed by questions which in our view were then currently important to the linguistic community. Each question set was accompanied by bibliographical references plus occasional interpretive comments a line or so in length.

In those structuralist days (say from the late 20's into the beginning of the 50's) most American scholars (I would guess) did not consider themselves as affecting the data much, but rather as coldly and abstractly (from outside the system) describing the innate system scientifically (cf. Hockett 1948, with structure as innate, rejecting Preston). This, perhaps, would cover much of American Bloomfieldism, even though Householder (1952:261-62) said that 'many parts of [Harris'] book seem to me pure hocus-pocus'--i.e., a belief that 'a language...is a mass of incoherent, formless data, and the job of the linguist is to arrange and organize this mass, imposing on it some sort of structure'. This latter view is closer to that of some scholars in Great Britain of the time. For example Firth (1955, in Palmer 1968:39) says: 'The expression "phonetic structure" has no place in my own theory, since elements of structure are mutually inter-related abstract categories set up by the linguist, and are timeless and "ineffable"'; and (Firth 1950:42) 'schematic constructs'...'have no ontological status', even though (14) 'we may apply systematic categories to the statement of the facts' which apparently include features 'which appear to be part of the patterned process.' And for Allen (1957:11-14) the linguist invents the facts.

My own work early included emphasis upon the necessity of observing native speakers reacting to their own material as a basis for finding relevance in a phonemic system. (See, for example, "Live Issues", 1955:5, the section entitled "Observable Native Reaction and Psycholinguistics as Sources of Postulates and Methodology'.) Yet this did not put heavy weight on the linguist's observational stance as affecting his description extensively.

It wasn't until in the late 50's (Pike 1959), when I began to use the metaphor of particle, wave, and field as a means of illustrating to nonlinguists some of the problems in linguistics, that I noticed with astonishment that some problems of linguistics appeared to me to parallel certain of those of modern physics (as seen in Einstein and Infeld 1938). Gradually this metaphor became more and more helpful in teasing me to further questions about linguistics. In the first place, it encouraged me to pursue alternate views of a set of data even when it was difficult to show the coherence of one view with another. If the revered science of physics was having difficulty, and had to settle in its descriptions for a kind of relativity to the

observer, why should I expect to have any less difficulty when I was dealing with data vastly more complicated than an atom?

From then on I pursued these particular thoughts vigorously as a model for handling difficulties of unit versus fusion versus relationship. And it allowed me without apology to myself (let alone to my contemporaries who were looking at things quite differently) to make explicit to myself the fact that as a human being I had a choice--undetermined by the data--to describe those data from different observer standpoints. I was no longer compelled to try to have a single descriptive field procedure, nor to dream of a single mathematical or formal description (or "representation"), which must start from one unchangeable standpoint and lead to one inevitable formal result. Rather I could start from one of these viewpoints in focus (but with the others inevitably present, even though hidden or out-of-focus in the background), and then when desired I could "back up" and start from the other; or I could look at a single set of data first from one viewpoint, and then change my observer stance and see them from another. In this sense, therefore, the observer merged into the description.

In addition, in looking back at my publications as a generalized approach to the study of human behavior (Pike first edition 1954, 1955, 1960; second edition 1967) the distinction between etic and emic could be viewed as a relationship to observers. The outside observer would see a structure which could be called an etic one because of this outsider relationship. On the other hand, when the outside observer felt that he had got sufficiently inside the system to see the material in terms of units and structures as reacted to by the insider, we could call the resultant description an emic view of that system.

Etic and emic views were relative to the observer, but with an indeterminacy between them, illustrated by the fact that a growing etic description gradually merged into an emic one as the analyst learned more about the system. Similarly, in looking for a general etics of structures, the analytical observer could make a taxonomy out of all reported emic structures, and thereby set up a general etics for the world. This then became the necessary (not merely "practical") entrance point of the outside observer into any system new to him. It helped to open the door for a discussion of those universals which then appeared empirically in all languages known to the analyst, and which seemed to him to make sense in reference to some broader view of human nature.

II. THE MATRIX AS FIELD

Much earlier in linguistic history an etic view had opened the door to the utilization of some kind of phonetic chart--standard to the discipline--without which no practical phonetician would feel comfortable. Such charts had selected characteristics of sounds as labels for the rows and columns, with the sounds themselves in the cells. When such sounds are viewed as particles, and the characteristics are viewed as sets of dimen-

sions of contrast, the chart as a whole can be viewed as a field structure, i.e., as an emic field subsystem in the language.

This view is sharply in contrast with the standard Bloomfieldian one: 'Tables [of phonemes of a language] like these, even when they exclude non-distinctive features, are nevertheless irrelevant to the structure of the language, because they group the phonemes according to the linguist's notion of their physiologic character, and not according to the parts which the several phonemes play in the working of the language' (Bloomfield 1933:129-30). It seemed to me, however, that anything so highly revealing must play some part in theory and in capturing the nature of structure--and, in such instances, to do so in relation to particle-in-field of units rather than merely by relation of particle-in-sequence of particles. In addition, Eunice Pike (1954; and see discussion in K. Pike 1955:23-24, 1967:328-31) showed that an arrangement of rows and columns of such a chart could have theoretical justification via ranking of structures in the mouth, nose, and throat.

But once such a chart was viewed as a legitimate unit of language, a relevant unit of field structure in its own right, the door was open for a major theoretical question. Could one extend an understanding of a field structure in phonetics to an analogous one in grammar? One could hope, I thought, for a similar fruitful result in grammar from comparable charts (which I called matrices) if they could be constructed and justified. The first successes in this area were with data and charts provided me by colleagues of the Summer Institute of Linguistics. I used these data as illustrations for my presidential address to the Linguistic Society of America in 1961 (see Pike 1962).

This success was to me highly encouraging, because it allowed tremendous simplification and vastly greater perspicuity in certain phases of description. Starting from a basic kernel matrix of clause types, for example, one could show derivation to a matrix of related but different clause types, passing from the one to the other directly before working with the internal details of the system. The details (or, if one prefers, the rules) were less bothersome to me if I first went from matrix to matrix--from kernel matrix to derived matrix--before dealing with the internal details of material in any one cell. The added step in 'descriptive order' (cf. Bloomfield 1933:213) helped us to come closer to the spirit of Bloomfield's goal (mentioned in relation to English plurals) where 'Our aim is to get, in the long run, the simplest possible set of statements that will describe the facts of the English language' (211-212), using where necessary a postulated 'basic alternate' (209), as 'the underlying form' (218), 'lest we get an unduly complicated description' (218)--but here I could reach that goal (essentially a combination of simplicity and transparency) only by postulating the more general emic matrices to be referred to before describing the specific details.

In the future perhaps the use of emic matrices, as themselves comprising either underlying or derived forms, could

serve as intervening units in derivational rules in an extensive way. If so, dreams of elegance of description by way of more depth in rule structures might conceivably be attained with less loss either of the simplicity mentioned by Bloomfield, or of the intuitive perspicuity which I strongly feel the need of--and can personally attain in a complex situation in no other way. (Here perspicuity is a general term suggesting ease of insight into a system--not synonymous, apparently, with some current uses of the terms "transparency" or "naturalness condition", for which see definition and references in Palmarier 1972:189, 100-01.) In addition, I would expect that such a matrix component within the rule structures would have as a characteristic the possibility of being adapted directly to pedagogical purposes for textbook use--for memory aids and practice drills by the student.

Another forward step in the development of a matrix procedure was their application to the finding and describing the shape of phonological blocks in morphological systems. In the Fore of New Guinea I found (Pike 1963) systems where the listing of forms in a paradigm did not show the relationships, as much as I desired, of parts internally; and the attempt to analyze the affixes in a simple morphemic segmentation led to unsolvable problems, including difficulty with the analysis of homophonous forms, and to extreme difficulty in specifying rules for allomorphic change. On the contrary, by setting up a matrix of a subset of forms, with different semantic dimensions as rows and columns, and--in addition--by permuting rows and columns so that in so far as possible like phonological elements would be adjacent to one another (forming full or partial rows, or columns, or other-shaped blocks of forms), such phonological elements ("formatives") formed a visible pattern of overlapping areas within the matrix. Such a pattern, in turn, (1) allowed for a semantic interpretation in terms of the intersection of semantic dimensions manifested by a single specific formative, and (2) comprised a set of form-meaning composites, of a matrix type of interrelated blocks of formatives.

But a complicated relationship between formative blocks is so highly arbitrary (like the classical arbitrariness of form and meaning in the lexical "sign") that it could serve as one identifiable "finger print" of that particular language, or set of languages, such that its presence in two or more languages could be expected to occur only as the result of historical inheritance of forms or of area spread. That is, a new kind of (nonlexical) form-meaning relationship can be postulated as a unit valid for study through its identity-under-change-over-time. And the shocking thing about it is that this form-meaning composite (the shape of the interrelations of formative block plus its intersecting semantics) can be seen even when the phonemes or phoneme sequences comprising the blocks is so radically different from language to language that a classical tracing of sound change is in these instances difficult. It seems to me that this should potentially leave the door open for a new development in comparative-historical linguistics. It seems

probable that in some instances the pattern of relationship between form and meaning in formative-block shapes is more constant over time than the actual relationship between the sounds themselves. That is, one might conceivably be able to reconstruct patterns of form and meaning in which the reconstructed item is some kind of matrix system, rather than reconstructing specific sounds or sound sequences in specific lexical items. If so, this would give scholars the means for reconstructing certain relevant grammatical materials where the sounds themselves have changed so much that they are not specifically recognizable. (As possible evidence that such block patterns might be useful, see reference to Seiler concerning Greek, in Pike 1965:208n.)

In the meantime, a totally different approach to relational matters has been developed by the stratificational grammarians (cf. Lockwood 1972). Their handling of networks is in many ways much more sophisticated than the ones mentioned here. Just how the two approaches should eventually share contributions should also be a fruitful topic for the future--but is not at all clear to me now.

Somewhat closer to the problems discussed here is some of the work on morphological paradigm and on clause structure as treated by Hudson (1973), in relation to systemic work of Halliday; here, too, the relationships with our work must await further study. (It is astonishing to me how long scholars can follow related paths before the work merges into joint endeavors.) Perhaps some future young scholar without our old baggage of biases will be able to provide us with this insight.

III. WAVE NUCLEI AND WAVE INDETERMINACIES

Turning from field to wave, we note that in the early structuralist days there was extensive treatment of that which in tagmemics may now be treated in relation to wave theory. A change in the phonological content of a morpheme under different conditions (or full or partial merging of one item into another) was described in morphophonemic process terminology. This was popular in the early 40's, but was frequently replaced by treatment as item-and-arrangement (without reference to explicit change process as such) in the late 40's and early 50's (compare the first and second editions of Nida, 1946 versus 1949, to see a specific shift from one to the other). And rule structures, like classical morphophonemics, can for some purposes be viewed either as processes (whether in the data or merely in the description is not always clear to me), or as static representations of relationships.

The relationships between nuclear and peripheral structures in American linguistics was discussed by Pittman, early (1948). Tagmemics would now view these kinds of relationships of nucleus and margin as components of a wave movement. And fused borders seen as indeterminacies resulting naturally from wave fusion (from the tagmemic viewpoint) need to be explicitly a part of theory (theory which allows waves to merge into one another, identified as distinct by their contrasting nuclei even when

there are indeterminacies at their borders).

In addition, a wave view can be applied not only to change over time, but to "semi-static" described ("pictured") relationships as between central and marginal meaning of a unit, for example (or to the photographed, hence static, pattern of the concentric circles of a pebble-disturbed pond).

IV. PARTICLE IN PRACTICE

We turn from the wave to the particle as more typical of the structuralist tradition, and carried on to some degree in any system which lists lexical items or classes as one basis of description or as an end point of rules. Here transformational grammar--from our view--is partially particle oriented with its "NP VP" notations (even where its focus of interest is on the rules relating such elements). An item-within-rule-relationship seems, from the tagmemic perspective, to characterize much of the transformational work.

On the other hand, in the stratificational theory of those scholars for whom relations turn out to be relations between relations (rather than relations between units) the particle, in theory, is hard to find, even when to us it appears to underlie it in practice. But for some of us (as well as, I believe, for some scholars in the stratificational tradition) we need units to be related, if we are to feel comfortable and able to work empirically. Lamb (1971:158-59) in disagreeing specifically with my point of view which insists on the need for units says that for him 'the linguistic structure is a network of relationships and just relationships...so that the system does not consist of items connected to other items by various relationships, but relationships connected to other relationships and so on throughout the entire network.'

V. ON THE GENERAL NATURE OF LINGUISTIC STRUCTURE

It seems highly probable that this difference of attitude between unit and relationship, or between unit and rule, reflects a very deep philosophical difference. The tagmemicist includes a physical component for each of its units; he never abstracts a phoneme, a morpheme, a phrase, a sentence, or any other language emic unit totally away from its physical embodiment or its physical contrastive features. Yet it seems to me that at times proponents both of stratificationalism and of transformational grammar attempt to do so (the stratificationalist at those times when he wishes to discuss relationships as such, without reference to concrete forms within those relationships; and the transformationalist when he wishes to discuss rule-related symbols without dealing with specific concrete items manifesting those symbols). Here, of course, it is very difficult to be sure that one understands a fellow scholar, and it is even more impossible to treat in a few sentences the range of variability within any one approach to linguistics. Nevertheless, I venture to quote Chomsky (1962:129):

Motivated now by the goal of constructing a grammar, in-

stead of a rule of procedure for constructing an inventory of elements, we no longer have any reason to consider the symbols 'NP', 'Sentence', 'VP', etc., that appear in these rules to be names of certain classes, sequences, or sequences of classes, etc., of concrete elements. They are simply elements in a system of representation which has been constructed so as to enable us to characterize effectively the set of English sentences in a linguistically meaningful way.

In tagmemic work, on the contrary, a symbol such as "VP" would in fact be the name of a class of concrete elements. Otherwise, it would seem to me to be an equivocation to refer later in a description to the occurrence of any verb or of any verb class--or to refer to language as a set of sentences. Thus Chomsky in the same article (1962:148) refers to 'a certain verb' which occurs in two verb classes; but this suggests to me that Chomsky there acts as if such elements were concrete.

There is a further general difference, amongst linguistic theories, which may be related to the one just mentioned. There seemed to have been in early structuralism a tendency toward a reductionism specified by Weiss for whom 'The universe is the sum of the movements of its fundamental elements, the electrons and protons' (1925:390), 'including, of course, the particular aggregate known as the physicist or the behaviorist' (1925:47, or 1929:52), so that 'human conduct and achievement reduces to nothing but [*italics his*]' groupings of geometrically-structured groupings, or motions of these forms (1925:49, 1929:52). This did not make it easy for a hierarchical theory of thresholdism to take root. There was no objection in the Trager era to having phonemes distributed in morphemes, which in turn were distributed in syntactic units, but there was implicit heavy resistance to a syllable having important theoretical (versus practical) relevance, or to a phonological hierarchy with multiple thresholds interlocked with a grammatical hierarchy also with multiple (non-isomorphic) thresholds.

For some time tagmemics, almost alone amongst earlier American approaches, insisted upon such hierarchical units and thresholds with crisscrossing relationships between them from one level to another. I would expect, however, that in the near future this kind of development will receive much greater attention--especially by the stratificationalists, for whom interstratal concerns are often paramount. That this should happen in grammar seems to me almost inevitable, once the idea is rejected that the sentence is highest grammatical threshold. Other units between sentence and conversation can then be sought. The grammatical paragraph, for example--not just a semantic intermediate structure--needs further study in the coming decade.

Such thresholds, in the tagmemic view, are part of the necessary structure reflecting the demand for universals of hierarchy for the human. The constraint upon man is such that he can only handle a small number of random elements (cf. Miller 1956); and when perception gets cluttered up with minute details,

the human being, in order to perceive in a rational way, clusters perceptions into clusters of features which are perceived as single total units. This selecting and grouping into attention becomes the epistemological basis for making possible, in any sense at all, man's success in fulfilling the 'conditions of knowing' anything (see Sinclair 1951).

And these conditions of hierarchical universal necessity (dictating the presence of thresholds without dictation of the precise number in any one system) in turn relate to the necessity for a rhythmic grouping of units with their nuclei and margins, which in its turn relies upon a wave theory for its description. And in my view, again, future discovery of some elements of the psychological structure of man must include not only general descriptions of the relation of language to behavior, but even more specific relationships of language to hierarchically-structured rhythmic behavior.

Miller, who earlier found that the study of vocabulary was inadequate to explain speech, has now (1974) found that a transformational approach is also deeply inadequate, so that we are 'desperately in need of a third' metaphor beyond an associational and primarily-syntactic description, since 'something vital is missing' (403), and 'a theory that has no central place for meaningful messages can scarcely satisfy a psychologist' (402). Yet Bloomfield had referred to 'the fundamental assumption of linguistics: we must assume that in every speech-community some utterances are alike in form and meaning' (1933:78). Yet Bloomfield had earlier (1926:153) attempted to use the 'method of postulates' which 'is fully adequate to mathematics'. A similar interest in mathematical approaches to language might possibly have been underlying the attempt of Harris to lower reliance on meaning in description, in order to achieve rigor of presentation: 'In principle, meaning need be involved only to the extent of determining what is repetition' (1951:7n). This attitude was passed on to the climate in which Chomsky began to look for autonomous syntax: 'I think that we are forced to conclude that grammar is autonomous and independent of meaning' (1957:17; and see also 15). Much more recently he maintains this position: 'Recall that grammars, in a nonprocedural theory, are purely formal objects' (1975:177n); and he affirms that 'the absolute autonomy thesis implies that the formal conditions on "possible grammars" and a formal property of "optimality" are so narrow and restrictive that a formal grammar can in principle be selected (and its structures generated) on the basis of a preliminary analysis of data in terms of formal primitives excluding the core notions of semantics' (177; see also 179-80, 183-84, 159; and compare Partee's comment, 1975: 203-09).

In the first specifically tagmemic (née gramemic) publication (Pike 1954:117, 1967:219), however, form and meaning were tied closely together into units in analysis and description--units did not exist without their relevance; and such meaning included behavioral impact and understanding. Even there a

meaning component (later called role) was treated as essential for describing such units as subject (1954:117, 1967:219), where features of actor or recipient-of-action were necessary for the differentiation of one subject tagmeme from a different subject tagmeme in the class of subject tagmemes. Later Ballard, Conrad, and Longacre (1971) mapped form features of tagmemes onto their meaning features, and (in a crisscrossing list) meaning features on to form features (365-77).

Yet even this was not enough: Evelyn Pike insisted (in Pike and Pike 1977:365-74) that purpose should serve as a kind of role in a third hierarchy (paralleling the hierarchies of phonology and grammar). This was the referential hierarchy of the talked-about-act; it was not a set of meanings abstracted from the forms, but a further separate structuring of the discourse as a whole, reflecting one's understanding of the total event which was being talked about. This structuring was not the same as the grammar, since the grammar was the telling order, as over against the referential hierarchical structure as the happening order; and this, in turn, opened up the way for further experimental syntax (263-67, 274, 344, 392-404) in which a story could be told "backward", for example, with appropriate added grammatical markers, without loss of meaning other than change of focus. In addition, however, each of the three hierarchies--grammatical, referential and phonological--could have its thresholds (its levels), divided into pairs of levels (21-34), such that each pair contained a minimum and an expanded set of units, but the whole set of such units (whether minimum or expanded) carried an over-all kind of meaning. For grammar we have (24) among others, the meaning of 'proposition' (for clause, sentence), 'term' (for word, phrase); for referential hierarchy we may have 'event' versus 'participant' (367-76); and (building on Tench 1976) we have syllable and rhythm unit (cf. stress group) comparable to clause and sentence, with phoneme or phoneme cluster as analogous to morpheme or morpheme cluster.

VI. PHONOLOGY

Thus far we have said relatively little about phonology except to insist on its hierarchical nature, with thresholds. Yet in the Tragerian era it received major attention from a majority of American scholars. Trager and Smith (1951:8) insisted 'in theory' on the completion of phonemics (versus in 'actual procedure', 54); on 'completing the phonology' before morphemics--that is, on the autonomy of the analysis of phonemics in reference to grammar. There was, in general, agreement on these matters among American scholars of the time. Only a few of us protested vigorously that there needed to be (and inevitably were) grammatical prerequisites to phonemic analysis. But the deep irony is this: that Chomsky, who led in the rejection of some version of autonomous phonemics, nevertheless set up a version of autonomous syntax (which we have already mentioned), but which has in turn come under heavy attack. Then,

to compound the irony, others attempted to start with a semantics which--in my view--seems to have been treated as autonomous, as a starting basis for describing syntax and phonology (for references see Palmatier 1972:156-58).

Tagmemics, on the other hand, has consistently rejected all three of these positions. There is no autonomy of one part of a system from another. In fact for the tagmemicists, so far as I know them, their system is such that X in some direct or indirect sense enters into the definition of Y, while Y in some direct or indirect sense enters into the definition of X. Thus we have no phonology unless there is simultaneously grammar and referential structure, no grammatical structure analyzable without some direct or indirect reliance upon both phonological and referential structure; and no referential talking structure without the presence of analytical reliance (by the linguist) upon both phonology and grammar.

How, then, can we cope without falling into a vicious circularity? If one accepts a partial--even sloppy--understanding of some meaning, and some grammar, and some phonology, then a preliminary vague approach to a wee bit of all three at once is then allowed for. And from this, as we know empirically from experience--a very great development in any one of the three directions is then possible. With a small amount of grammatical knowledge (for example, the beginning and end of some sample sentences) one can go effectively to the laboratory for a partial study of phonology, if one also has just enough data from the referential hierarchy or from the lexicon to know which words are in some sense semantically the same or different (or if he has some other variety of related native reaction available). Similarly, with a relatively incomplete knowledge of the phonology (ignoring whole areas of syllable and stress-group data, for example), plus a small amount of understanding of lexicon and referential structures (the background meaning of the particular event, plus a general dictionary-like understanding of some of the vocabulary) one can do a great deal with the grammar. Finally, with a text written in a vague phonetic way, and with partially analyzed clause structures and affixes, one can go a long way toward the preliminary analysis of discourse structures in a language.

What more, for the future application of phonological studies? Perhaps poets can be encouraged to use a notation which records more components from the phonological hierarchy than they are accustomed to as they compose. They could add more explicit formal representation of intonation (which has been a dream of mine for a long time, see 1967:528-30). This, in turn, would profit from a further development of the study of voice quality. But, more than linguistics as such, it needs some kind of a salesmanship (beyond my powers apparently) to develop a breed of poets which wants to say what it means when part of what it means comes through what it says in the form of intonation. I hope I live to see that day--it will be an extremely exciting one.

VII. ON MODES OF ARGUMENTATION

I am struck with another irony of history. Chomsky had in his early work scant interest in methodology for finding out grammar structures of strange exotic systems: 'In short, we shall never consider the question of how one might have arrived at the grammar whose simplicity is being determined... Questions of this sort are not relevant to the program of research that we have outlined above' (1957:56). He said rather that 'Our ultimate aim is to provide an objective, non-intuitive way to evaluate a grammar once presented, and to compare it with other proposed grammars' (56). It came as a surprise to me, therefore, to find that if one asked some of his best-known successors what was invariant in transformational grammar from 1957 to--say--1968, that one might hear the answer, as I did: 'a mode of argumentation.' But (as I see it from some distance) this mode of argumentation has in fact become a methodology--a device to discover and support new grammatical or semantic facts and relationships. The irony, then: Perhaps the main lasting contribution of Chomsky has been to a heuristic! (A point of view which he would find difficult to share, I suspect.)

For the future, this is encouraging to those of us who are interested in how to find things out. It suggests that we may live to enjoy, in the work of others, still further major discoveries like the descriptive techniques of the Bloomfieldians, or the mode of argumentation of Chomsky and his successors, which will lead us to even more elegant insights. Perhaps they will come from the sociolinguists--or may already have done so in the eyes of some of our contemporaries--or from the psycholinguists, or from the semioticians, or from some source not born as yet. But whatever it is, it should be heartily welcomed.

One possible direction such investigation might take is in the relation of the particular to the general. In earlier structuralism there was emphasis on differences between languages. The surprise to an earlier generation of scholars was that many languages did not look like Indo-European. And the study of this range of divergence was necessary to get a view of the possible diversity of human thought forms as seen through language. Once this was well along, however, it has been very profitable to have our current generation of scholars interested in likenesses between languages--and especially the universals (or near-universals) among them--which suggest some deep underlying constraints in human structure itself. Undoubtedly, in the future, more profound facts of this nature will be discovered or refined.

But I am interested in a sharply different focus: Could we possibly hope that from an early attention to details of difference, which changed into a search for universals, we are nearly ready to understand the particular fact? Idioms, for example, are not easy to handle in a system which focuses on rules. Yet idioms have a way of being born, and affecting total systems. Somehow the study of the development of the particular, as a change in behavior, is as crucial to the understanding of

human behavior as is the search for the general.

In my view, knowledge of the particular may develop from various directions. On one hand it may come from the fusion of forms (in rapid speech), into new forms (or matrix patterns). On the other hand, the particular may be the result of random borrowings from other systems. Or it may develop from the extension, to a new situation and set of verbal contexts, of words designed to fit an old situation.

In any case, if the particularization were to swing too far, communication would cease. There must be the feedback of analogy to reestablish a system. And here, once more, we return to a point where we were earlier; a matrix of structures is able to operate simultaneously with regularity and irregularity without clash. The regular becomes a special instance of a form-meaning matrix designed to care for the description of the irregular! And analogy re-regularizes the irregular. But without the underlying system of dimensions of structure intersecting in form with meaning, the particular could have no meaning, and the regular would itself disappear. Within such a structure, on the other hand, the irregular can become regularized, and the regular can be fused to irregularity without loss of meaning, and without a resultant chaotic form. Surely in these directions we have room for further development of our understanding of human nature.

And in such an intersection of items we have a model for the intersection of system with system, which then allows for an understanding of translation as a kind of paraphrase of one referential structure being mapped on to a culturally-different grammar--and for the particular message from the one to be mapped onto the matrix of the other without total loss of intelligibility. Thus even a theory of translation could be further elaborated which would take advantage of the form-meaning interest of the Bloomfieldian era, of the rule description of the transformationalist, of the relationship emphasis of the stratificationalist, and of the hierarchical structuring in relation to particle wave and field of the tagmemist.

Finally, the door to the future opens even further: The referential hierarchy can emphasize readily particular discourses or conversations (leaving to the grammar the means for describing more generalized patterns of telling a story) and can deal with the talked-about structuring of the happening in relation to its background reality. But this in turn leads the encyclopedia to fall into the linguistic arena through the treatment accorded to the referential hierarchy and the lexicon. So now we find that referential talked-about happening, grammatical telling, and phonological enunciation become part of a single system which when coupled with the observational freedom of optional vantage points provided by access to language through particle, wave, and field, leaves us freedom to do "our own thing" with confidence and self-esteem, while enjoying one another in their different roles (as I do many of you with your stubborn irrational opinions!).

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I

SEMANTICS AND LEXICOLOGY

SEMANTICS IN A LINGUISTIC FRAMEWORK

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My title may suggest that my problem is, given a linguistic framework, how to fit semantics into it. Linguistics is the box, semantics is the contents. Actually, I have in mind exactly the opposite problem: How to shape linguistics so as to fit semantics into it.

Much recent linguistics has, in effect, tried to put hats into violin cases, as it were, and violins into hatboxes. My idea is to investigate what would result if we started with the hat, or the violin, and built the receptacle to fit it.

Whether we build our framework from scratch or get it by remodeling something else doesn't matter here; it is the end result that matters, not how we get it.

To make my point, I can spend less time each on a number of examples, or more time on fewer examples. I have deemed the latter the wiser course, and in fact will spend most of my time on one single problem: How to handle the meaning of the English quantifiers 'all' and 'some'.

I beg to point out that my example is not randomly chosen. 'All' and 'some' are not ordinary lexical items; being syncategorematic terms, as logicians say, they have no denotation and no connotation; they are not well handled by dictionaries. To elucidate their meaning we must turn to logic; and I choose them as a paradigm case for studying the relation of logic to linguistics.

'All' and 'some' exhibit some important facts about meaning. First, they show especially well what Wittgenstein meant by his slogan, 'meaning is use'. What they mean is how they are used; their meaning is the rules governing their use. The rules in question are the laws of logic. Second, their meaning primarily is structural, relational, oppositional---in all these features differing appreciably from typical lexical meanings. (And indeed this is why they would often be said to have grammatical rather than lexical meaning.)

The correct logical account of quantifiers was not seen until 1879, almost a century ago, by Gottlob Frege; indeed it is the insight that Quine takes as sharply marking the beginning of modern logic. But a part of their logic, and a self-contained part, was worked out by Aristotle in his treatise On Interpretation; this is the part traditionally known as the Square of Opposition. To illustrate the points I want to make here, I can confine myself to this self-contained part, and even to one single proposition of it, the first proposition that deals with contradictions. 'All men are mortal' is the contradictory of 'Some men are not mortal'; that is, one of these must be true, and they

cannot both be true. To restate the example abstractly, in a symbolism like that of *Principia Mathematica*, $(X) \phi X \equiv \sim (\exists X) \sim \phi X$. It is this proposition that I am going to single out as my focus of discussion.

This proposition doesn't wholly give the meanings of 'all' and 'some', because there are laws of logic, essentially involving 'all' and 'some', that cannot be deduced from this one; but though not exhaustive it will suffice for my present purpose.

The proposition is an equivalence, or, as Quine calls it, a biconditional; that is, it itself is equivalent to the conjunction of two conditionals, one being $(X) \phi X \supset \sim (\exists X) \sim \phi X$ and the other being the converse of that. All truths of logic interest the semanticist, but what interests us right now is that this equivalence can be reconstrued as a definition. We can construe it as a definition of 'all' in terms of 'some', or as a definition of 'some' in terms of 'all'. If we view definitions as Frege, Russell, and Quine do, we will distinguish in whatever language we are using between primitive and defined expressions.

Here two questions begin to present themselves. First, if we can define 'all' by 'some' and 'some' by 'all', and must choose (in order not to be circular), which way shall we choose? Second, what bearing has this on the linguistic framework of semantics? Psychologically, the second question is perhaps the more pressing, so I will take it up first. My answer is simple. I propose to treat definitions as transformations. This proposal is not wholly new; James McCawley did this in effect in treating the verb 'kill' as 'cause to die', and in any case, novel or not, it might be trivial, depending on what varieties of transformations one admits. It becomes more interesting, and of course riskier, if one adds metaconditions, such as that transformations be used only for definition. I myself don't propose that particular metacondition, but I propose something like it, namely that all transformations be asemic, i.e., to use the word that transformationalists use, all transformations be meaning-preserving. If a transformation is asemic, then its input and its output may be regarded as synonyms, or paraphrases, of one another, and parsimony (simplicity) in semantics enjoins us to treat synonymy as the result of definition, so far as possible. In other words, minimize the set of primitive (undefined) lexical items.

But is there an algorithm, or, if not that, then any method for minimizing this set? No. The clear answer is no. And we can demonstrate that, in any case, there is no one minimal set.

We can demonstrate this with the example of 'all' and 'some', and this brings us back to question one: given the interdefinability of 'all' and 'some', which direction of definition to choose? The answer is, there is no basis for choice; the choice here is arbitrary. We confront a situation where it is necessary and appropriate to be arbitrary.

This is a familiar situation in logic. There is a close parallel with the words 'and', 'or', and 'not'. Just as we can define 'all' in terms of 'some' and 'not', and can define 'some' in terms of 'all' and 'not' (but cannot define 'not' in terms of

'all' and 'some'), so we can define 'and' in terms of 'or' and 'not', and can define 'or' in terms of 'and' and 'not' (but cannot define 'not' in terms of 'and' and 'or'). Since we do not want our definitions to be circular, we can't define both 'and' and 'or', nor can we define both 'all' and 'some'. If we choose to define just one of each pair, we have to arbitrarily choose which one. And if, shrinking from being arbitrary, we choose (like Leibniz's God) to define neither, then we have a redundancy in our set of primitive concepts.

Here, then, is the basic situation. Among our ideals of conceptual analysis are these three: we don't want to be circular, we don't want to be arbitrary, and we don't want to be redundant. Circularity, arbitrariness, and redundancy are three flaws to be avoided. And the basic situation is that it is not always possible to avoid all three.

And that means that we must choose. The need to choose, avoided at the first level, breaks out at the second. We have to choose whether to choose or to do something else. Given that these three ideals of avoidance are not always compatible, each of us is called on to settle for himself his hierarchy of preferences, or priorities. For my part, I am more concerned to avoid circularity than redundancy, and redundancy than arbitrariness. I therefore propose to explore solutions which avoid circularity and, as a secondary aim, avoid redundancy where possible, but that accept being arbitrary.

It is pointless to argue this hierarchy of preferences. But I can point out a consideration which makes arbitrary choice less unpalatable than it would otherwise be. Even when a choice is arbitrary, i.e. when we cannot make a choice without making an arbitrary choice, there is something we can do to neutralize the fact of its being arbitrary; namely, to call attention to the fact that it is arbitrary.

Actually, people often do this. For instance, consider latitude and longitude. They differ in that there is a natural zero-line for latitude but not for longitude. To choose the equator as parallel zero was natural, because it is defined by the poles of revolution, but to choose Greenwich as meridian zero was arbitrary, and people recognize this. Similarly with weights and measures. It is true that with these we see another consideration begin to enter in, whereby in another sense the choice is not arbitrary; still more so with the choice between one language and another. But these considerations are practical, not theoretical. Now, what theorists can do in recognizing a choice to be arbitrary is to recognize that, when the choice between framework A and framework B is arbitrary, the fact that one theorist uses framework A and another uses framework B does not constitute a theoretical disagreement between them.

Let me illustrate this with a linguistic example. Suppose that we raise about the formula $S \rightarrow NP+VP$ the following question: If NP and VP mean anything like noun phrase and verb phrase, then doesn't this rewrite-rule favor the SOV and SVO languages over the VSO languages?

Now it makes a difference to our answer whether the order NP+VP is intended as arbitrary or not. Whoever treats it as arbitrary will agree that one might as well have adopted, instead, the formula $S \rightarrow VP+NP$, and that this would set up a different but equivalent framework.

On the other hand, anyone who argues, let us say, that to start with $S \rightarrow NP+VP$ is simpler, because if we start with $S \rightarrow VP+NP$ then we sooner or later just have to reverse this so as to end up with the verb phrase last --- anyone who argues so is thereby arguing, in effect, that it is not arbitrary which order we adopt.

Or, it might be contended that one should universally start with $S \rightarrow NP+VP$ because though, with some languages, one would eventually want to reverse this, there is in those languages, and just those, independent reason for positing reversal. This argument is a different argument, but again it is an argument for viewing the initial choice as natural rather than as arbitrary.

It would be yet a different argument, but again with the same conclusion, if one were to argue that there are languages where there is no independent reason for reversal, but that these languages are statistically a minority and that for the sake of uniformity it is advantageous to assimilate the minority to the majority pattern.

Here are three arguments for viewing the order NP+VP as natural, not arbitrary. Now consider the contention that for some languages NP+VP is the natural underlying order, for others VP+NP is the natural order, that universal semantics wants to take account of this fact, and that the way to do it is to pick one of these two orders arbitrarily and derive the other from it transformationally.

I myself favor this last view, but even without taking sides I should make these two points: First, the fundamental question is whether the choice between NP+VP and VP+NP is natural or arbitrary; and second, it may be rational to make a choice even if that choice is arbitrary.

I have been urging that the arbitrariness of an arbitrary choice can be in part neutralized by intelligence. There is a counter-argument that I should like to take account of, very lucidly stated by Sydney Lamb in his paper "Mutations and Relations" (First LACUS Forum 546 = Linguistics at the Crossroads 412). This argument, adapted to the present discussion, is that people will forget that the choice was arbitrary, and will tend to treat it as natural. My answer is that this is true, but that it is hopeless to try preventing misunderstanding, and that one who is sincere in his determination to keep the arbitrariness of a choice in mind will give himself practice by making the opposite choice from time to time, to give himself symbol-freedom.

This leads me on to another point in Lamb's paper. Lamb assumes that a framework that spares us this or that arbitrary choice will be better, other things being equal, than one that forces that choice. That may be---I needn't go into the question--, but what if there isn't any such framework? Lamb applies his idea to synonymy---my main concern in the present paper---, and says

(544 = 411), "Similarity, even very close relationship, does not have to mean that one is derived from the other"; I reply with the counterquestion: If it doesn't mean that, what does it mean? He illustrates (522 = 418) with the example of the passive, on which I will spend a few words.

He says that "The active and the passive ... don't mean the same thing", and I agree with that, but will deal with it later. However, although active and passive don't have the same total meaning, there is a certain partial meaning which they have in common---let us for the nonce call it verificational meaning; and we may then say that though they are not totally synonymous, they are verificationally synonymous. Now the idea I am propounding is the idea that synonymy is to be treated by transformations, and so it behoves me to press my case. It depends on an identification of transformations with derivations, and of derivations with deductions. (This may seem reminiscent of Bar-Hillel in Language for 1954, but the resemblance is slight.) There are not straightforward, out-and-out identifications; it has not escaped me that there are differences. But I have in mind the fact that necessary equivalences such as the sciences of mathematics and deductive logic deal with function as two-way (symmetrical, reversible, reciprocal) derivabilities; from $X+Y$ you can derive $Y+X$, and vice versa; so with 2 and $1+1$ and 1×2 and $2'$ and $+\sqrt{4}$ and so on. When the reciprocal derivability holds between propositions or propositional forms mathematicians speak of deducibility; and, in an algebraic or geometric context, whether the expressions are propositions or not, they speak of transformations. Now, I am not here discussing the question whether or not to use transformations, such as Chomsky uses. I am asking: Supposing that we do use them, but with such and such changes, then what? This approach is obviously noncommittal. It doesn't assume without question that we will use transformations; and it doesn't assume without question that we won't. It might eventually tend to the conclusion that we should use transformations, or that we shouldn't; I only need to assert this much, that I don't think it is settled that we shouldn't. (I may remark parenthetically that the support of Baudouin de Courtenay cannot be claimed for the 'static' view (contra Lamb 540 = 407), because when he contrasts *Nacheinander* and *Nebeneinander*, what he has in mind is not synchronic but dynamic succession versus synchronic and static coexistence, but diachronic succession versus synchronic coexistence.

My argument, then, in brief, is this. Synonymy is a variety of necessary equivalence. Necessary equivalence is equivalent to reciprocal derivability. When the linguist represents meanings, he must include representations of meaning-equivalences, and so of reciprocal derivabilities. And formally, these are transformations. Let me return to my example, thus ending this digression. The synonymy of 'All men are mortal' and 'It is not the case that some men are not mortal' is not a mere coexistence; as in the mathematical axiom that equals can be substituted for equals, it entails that either of these two propositions can be derived from the other.

And so we cannot escape from the quandary that I have already outlined. Derivation---transformation---is the means available to us to express synonymy; well, then, confronted with a reciprocal derivability, shall we choose both directions, or one, or neither? The so-called 'static' treatment in effect chooses neither. My proposal is, in general, to make an arbitrary choice and then treat it as arbitrary.

Let me begin to implement my proposal. For expository purposes I will speak in terms of altering transformational grammar; to revive the metaphor I began with, I will undertake to remodel an existing receptacle rather than to build an entirely new one. The grammar I start with, then, will have a base component. And here is the first step of remodeling: The semantic primitive 'all' will be incorporated into the base component. The quantifiers are a distinct, irreducible part of speech, a distinct major category; we can, and I do, reduce some quantifiers to others, but the category itself is irreducible.

This was begun to be seen by the medievals. Aristotle did not see it; in fact, in one of the amazing inconsistencies of his philosophy, he, the very person who made the first major contribution to their logic, failed to see that they were a counter-example to the subject-predicate doctrine which he took over from Plato. But in the fourteenth century Albert of Saxony gave a simple proof that the quantifiers are not part either of the subject or of the predicate. In order for the propositions 'All men are running' and 'Some men are not running' to be contradictory, they must have the same subject. But if 'all men' and 'some men' were the respective subjects, the two propositions would not have the same subject. Therefore, the subject of both must be 'men' (Philotheus Boehner, Medieval Logic (1952) p. 23). In modern logic the matter is not so straightforward, but Albert's insight, suitably adapted, carries over.

Of the two quantifiers I am considering, one is primitive and the other is defined. In this situation, there is a basic category with just one lexical item in it. Now it has been the practice hitherto not to allow lexical items in the base component. And we don't have to now; we can introduce into the base component the category Qr (quantifier), and elsewhere have a lexical insertion rule, replacing Qr by 'all'. But since 'all' is the only thing Qr can be replaced by, this is a mere trick. The import is that it was unwise to insist on keeping lexical items out of the base component; it might be feasible and wise to do this with most lexical items, and yet not with all.

Before going any further, I want to emphasize a certain caution, or qualification. I have been proposing in this case and that to make an arbitrary choice when we encounter a reciprocal derivability, and to treat one of the equivalent members as primitive, the other as derived. The caution is that this cannot always be done. A familiar example is the commutative law, $X+Y = Y+X$. It is not possible to give the commutative law the status of a definition, rather than an axiom, even though each member is derivable from the other. We cannot pause here to

consider why this is so. Nevertheless, it will be found that there are many cases useful to linguistic theory where it can.

A fundamental fact about quantifiers is that they have scope. Consider the celebrated pair of propositions,

- (1) Everyone in this room knows two languages;
- (2) Two languages are known by everyone in this room.

Early transformation theory, in one of its most grotesque analyses, took (2) as the passive corresponding to (1), and drew the conclusion that the Passive transformation changes meaning. But let us consider how the logician would handle this. If it were given as an exercise in elementary symbolic logic to formalize these two sentences, the most obvious answers are that (1) becomes

- (3) $(x)(\exists y)(\exists z) \quad (x \text{ knows } y \text{ and } x \text{ knows } z)$

and that (2) becomes

- (4) $(\exists y)(\exists z)(x) \quad (y \text{ is known by } x \text{ and } z \text{ is known by } x).$

I pass over a number of details, and leave the existential quantifiers in instead of replacing them by their definitions, because it makes discussion easier and doesn't affect scope. Also, I leave in 'every' in the singular instead of replacing it by its equivalent, 'all' in the plural. The important point is that the difference between (3) and (4) both captures the difference in meaning between (1) and (2) and explains it. The explanation is that though the two sentences contain the same quantifiers, they contain them in a different order, therefore with different scopes.

(3) and (4) are not a conclusive minimal pair, because besides the difference in quantifier order there is the difference that (3) contains actives and (4) contains passives. But to see that this is immaterial to their meaning-difference, we have only to replace the actives by passives and vice versa. If as a paraphrase of (1), instead of (3) we offered

- (5) $(x)(\exists y)(\exists z) \quad (y \text{ is known by } x \text{ and } z \text{ is known by } x),$

and for (2) instead of (4) we offered

- (6) $(\exists y)(\exists z)(x) \quad (x \text{ knows } y \text{ and } x \text{ knows } z),$

these would seem not so straightforward, but still (5) would be far closer in meaning than (6) to (1) and to (3), and (6) far closer than (5) to (2) and to (4). Any active and its corresponding passive differ somehow in total meaning, but it was quite gratuitous to make the active-passive relation responsible for the difference in verificational meaning between (1) and (2). Difference in the respective scopes of underlying quantifiers does it beautifully, and without needing to call on passivization for effecting any more than its usual slight change of total meaning.

I have been assuming that (1) and (2) were both of them unambiguous. But one might hold---and in fact this or something like it is held by Katz and Postal (p. 72) that both of them are ambiguous, that in fact each has the same two readings as the other, but that that reading which is the favored reading of (1) is the disfavored reading of (2) and vice versa. This seems to me plausible, and raises the question, which I don't here go into, of why (1) favors the reading (3) while (2) favors the reading (4). As far as my present point is concerned, only a restatement is called for. The two readings of (1), which are also the two readings of (2), are respectively (3) (or (5)) and (4) (or (6)). Also, it makes no difference to my explanation whether all speakers agree in their readings or whether for some (1) and (2) are both unambiguous, for other both are ambiguous, for yet others (1) is unambiguous but (2) ambiguous, and so on. My present task is to account for what the differences are, not for whom they exist.

It may be that (1) and (2) are both of them ambiguous. But there are unambiguous ways in English of expressing (3) and (4). (3) can be expressed, more or less, by

- (7) 'Everyone in this room knows two languages, not necessarily the same two',

or again by

- (8) 'Everyone in this room is such that there are two languages that he knows'.

(4) can be expressed by

- (9) 'There are two languages that everyone in this room knows'.

It is striking, and I claim it is significant, that the unambiguous ways are more cumbersome and stilted than the ambiguous ways. Both are 'ordinary language', in the sense of Wittgenstein, Black, and Malcolm, but one is more ordinary than the other. It is significant, because one of my purposes is to defend and revive Bertrand Russell's thesis that ordinary (natural) language is willing to be ambiguous for the sake of being convenient. With the help of transformations we can do justice to two facts: First, that alongside of an ambiguous sentence there is an unambiguous one, and second that the transformation from unambiguous to ambiguous is also a transformation from stilted to easy.

The ways in which a cumbersome, stilted sentence differs in meaning from an otherwise synonymous natural or easy or colloquial sentence would often be called 'rhetorical' or 'stylistic'. It behooves me to say something about stylistic meaning, and I will seize the occasion. What I say falls into two parts: the semantics of style, and how to handle it transformationally.

It is fruitful for semantics to introduce a very comprehensive concept---I call it total meaning---such that not only cognitive

(or descriptive) meaning, and reference, and emotive meaning, but also presupposition, and pragmatics, and implicature, and stylistic features would be included. A rough behavioral criterion---it would be a mistake to take it as decisive---is that two things don't mean exactly the same thing---don't have the same total meaning---for a speaker unless it is indifferent to him which one he says, i.e. unless he would, in all circumstances, just as soon say one as the other. If it turns out that by this criterion no two things have the same meaning, so be it; the concept would not, of course, be condemned as useless on that account, because there are concepts that have a use in theory even though they have no instances. But it would be incumbent on us to show the usefulness of the concept; one way of doing this is to show that though there are no perfect instances of the concept, there are approximations, and that things differ in the degree to which they approximate it. Another way is to show a structure in total meaning such that though no two expressions have the same total meaning, there are components or dimensions or the like such that some pairs are the same in this component or in that dimension. For example, Ogden and Richards, and C. L. Stevenson, and Hayakawa, have offered pairs of words such that in each pair one member had the same cognitive meaning as the other but different emotive meaning.

Now let us consider a typical stylistic difference. My sentences (1) and (8) will serve:

- (1) Everyone in this room knows two languages
- (8) Everyone in this room is such that there are two languages that he knows.

(1) is easy but ambiguous, (8) unambiguous but stilted; the difference in ambiguity I have pinpointed in the treatment of quantifiers; how do I handle the stylistic difference between easy and stilted speech?

I have no improvement to offer on the usual handling which is, in effect, first to say that there is a difference, second, to label it, and third to say that it is the same difference as is found elsewhere in such-and-such instances. Note that the differential treatment of meaning encourages a transformational treatment: If there is an item absent in sentence (1), present in (8), whose meaning we characterize only as effecting a change in meaning, then when we add that item to sentence (1), two things happen: (1) changes into (8), and the meaning of (1) changes into the meaning of (8). If we allow transformations to change meaning, then a transformation could be the item in question; but there is an alternative, necessarily equivalent, but possibly with advantages. That is to say that there is an item, call it SI (stylistic item), such that it is not (1) by itself that is changed to (8), but (1) + SI; and that the transformation which changes (1) + SI to (8) is obligatory. (It may well be a sequence of transformations, rather than just one.) Then among the things that that transformation does is, having passed the differential meaning of SI onto (8), to delete SI. SI is, as it were, a self-destructing trigger.

By this method we can always replace an optional meaning---changing transformation by an optionally inserted lexical item which triggers an obligatory meaning-preserving transformation and thereupon disappears. In a certain obvious way this treatment is less simple, but in a certain less obvious way it is more simple, namely, it introduces a homogeneity into the framework by making all transformations meaning-preserving.

Given the near-synonymy of (1) (in one reading) and (8), and the prospect of deriving one of them from the other, which should we derive from which? I leave out of consideration the possibility that both should be derived from some third sentence, as well as the possibility that we might want to derive (8) from more than one original source, even though it is unambiguous. I propose to exploit Russell's general idea that ambiguity is often the result of shortening. Treating this not as a command but as a recommendation, I would think of deriving (1) from (8) rather than the other way around. If (1) has two readings---the sole reading of (8) and also the sole reading of (9)---, then I would say that in total meaning (1) differs from both (8) and (9), to account for which we would need two SI-items, one to differentiate it from (8) and one to differentiate it from (9), unless some better way can be found.

This completes my brief two-part treatment of style, first as regards stylistic meaning, and second, as regards the transformational handling of it. I now return to my main example, the transformational treatment of quantifiers.

I have invoked the scope of quantifiers to explain certain differences in meaning. Here are two more examples.

There has been much discussion of the ambiguity exhibited by such a sentence as 'John is looking for a book'. Is it a certain particular book he is looking for, or is it just some book or other, any old book? Of the two readings, the former can be rendered unambiguously and easily in English: 'There's a book that John is looking for'. To express the other reading unambiguously, there is a way in English, but it is labored; 'John is looking for a book---any book, he doesn't care which.' The analysis of this ambiguity is far more complex than that of previous examples, and I only have one thing to say about it here, which is to call attention to the fact that the scope of the existential quantifier is different in the two sentences.

Our last example of scope concerns 'a certain'. The meaning of 'a certain' is puzzling; how does it differ from 'some' (in the singular) and from the indefinite article? The answer is basically simple; the difference in total meaning is the kind of difference that Wittgenstein would call a difference in use, and that would very well illustrate the fruitfulness of the maxim attributed to him by John Wisdom: 'Don't look for the meaning, look for the use.' The primary difference is just this: 'a certain', in addition to meaning 'some (singular), a/an', disambiguates scope-ambiguity by conveying the information that its scope is the entire sentence in which it occurs (with the exception of any other existential quantifiers, in which case it doesn't matter which one comes first). Thus, 'John is looking for a certain book' unambiguously means

'There is a book that John is looking for.' So useful is this disambiguating feature that the phrase is occasionally extended to the plural; e.g. 'Everyone in this room knows a certain two languages' unambiguously means 'There are two languages that everyone in this room knows'.

This is the primary use. The various secondary uses are readily accounted for with the help of implicatural rules. The rule for 'a certain' entails an overlap with 'some, a/an', namely when there is no other quantifier around and there is no indirect discourse (opaque reference) around. In such cases, the use of 'a certain' tends to invoke implicatural rules; e.g. if you say 'I was speaking on the telephone with a certain clerk in the department store yesterday, and he said...' etc., your words suggest that you could name or identify this clerk if you wanted to. The phrase can even be put to what Austin would call perlocutionary uses; for example, Cain might not wish to accuse Abel pointblank of opening his mail, but he might say to Abel, 'A certain person has been opening my mail'. Of course it is no use labeling such locutions secondary unless we have a theory to account for them; if they are an anomalous residue we would do better to just say so.

Let us now consider some of the departures from previous transformational practice that would be needed if we introduce quantifiers at the outset as a fundamentally distinct grammatical category.

The modern logical treatment retains the insight of Albert of Saxony that the quantifier of a subject-predicate sentence belongs neither to the subject nor to the predicate. But it goes further, in two ways. First, a quantifier may have for its scope a sentence which is not a subject-predicate sentence. The distinction in traditional grammar between simple and compound sentences corresponds roughly to Russell's distinction between atomic and molecular sentences. (His 'general', i.e. quantified, sentences are traditionally treated as simple, i.e. they are assimilated to his atomic sentences; that assimilation is precisely the point I am dealing with in this paper.) Second, the mainstream of modern logic reconstrues most grammatical subjects as logical predicates. Rather than attempt a general and abstract formulation, I will illustrate by an example. It is as if 'All men are mortal' were reconstrued as 'All things that are men are things that are mortal'; or, still more analytically, ' $(X) X$ is a man $\supset X$ is mortal'. Each of these two differences invites discussion. The role of pronouns will prove to be the unifying theme.

Russell-like logic exploits linear order of symbols in making this convention about scope, that the scope of a quantifier is all that is contained within the matching parentheses following it. Now as Quine observes in his Mathematical Logic (§12), the x's and y's that fall within the scope of quantifiers answer to the pronouns (especially to the third-person singular pronoun *it*) of natural language. And in English, a typical natural language in this respect, it is possible for the *it*'s of several successive sentences to have the same anaphoric reference, which is tantamount to there being in the same text translated into Russell-like arti-

ficial language a quantifier with scope extending over several sentences. It is true that any such theory would be unusual, if not unheard of in texts of 'PMese' (Wilfrid Sellars's label) as we have hitherto encountered them, but that is explained by two things: the very limited uses to which PMese is put as a medium of expression, and the availability of a device which consolidates a string of sentences into a single sentence. This device is mentioned by Katz and Fodor (Language 39.180-1 = The Structure of Language 490-1), and, for that matter by Aristotle (Poetics, ch. 20 end). It is true that this device requires prosodic changes and stylistic ones as well, but it would seem reasonable to say that there is a verificational meaning common to a string of n sentences and the single sentence that results from conjoining them by $n - 1$ occurrences of the conjunction 'and'.

We may assume then that the scope of a quantifier never, in remoter structure, exceeds a single sentence, but that a subsequent transformation, when triggered by appropriate SI's may dissolve a conjunction into a string of sentences. This transformation would be the reciprocal of the conjunction-transformation. This pair of transformations, conjunction-introduction and conjunction-elimination, might be a case where it is useful, though redundant, to have both of two reciprocal (or inverse) transformations. In this treatment, a quantifier whose scope in surface structure extends beyond a single sentence has in remoter structure a scope which consists of a molecular sentence conjoined out of its components by the conjunction 'and'. This is provided for by Russell's treatment.

In Russell's treatment, quantifiers are introduced in a formula ' $(X) \phi X$ ' which covers atomic and molecular sentences both. This is as if Russell were to have in the base component a rewrite-rule ' $S \rightarrow (X) \phi X$ '. One important difference between ' ϕX ' and ' $NP + VP$ ' is that it is more comprehensive; it comprehends this, the pattern of the simple sentence, but it also comprehends compound (Russell's molecular) sentences, as well as other quantified sentences---everything that falls within the scope of the quantified ' (X) '. Russell's way may not be the only way to preserve scope, but in some way or other the scope of each quantifier must be duly preserved or else the treatment is simply not a correct treatment of quantifiers.

Another important difference between ' ϕX ' and ' $NP + VP$ ' is that the former manifestly contains a free variable, ' X ', which answers to the personal pronouns of natural language. It would seem, therefore, that doing things Russell's way is tantamount to importing pronouns into the base component, rather than deriving them transformationally as substitutes.

It immediately proves fruitful to raise this question. The personal pronouns of surface structure have, it turns out, two uses, and the logician's treatment applies to only one of them. Besides their involvement with quantifiers, they also function as substitutes for proper names and the like. It is only the proposal to take quantification seriously that brings out this difference. Do pronouns, besides substituting for proper names, also substitute

for descriptive phrases? That depends on how we treat descriptive phrases. Under Russell's treatment, descriptive phrases are introduced definitionally with the help of quantifiers, with the consequence (if this treatment is adapted to natural language) that the personal pronouns which apparently substitute for them are really involved in quantification. However, in the present paper I am completely avoiding the treatment of descriptive phrases.

This paper has paid no attention to the question of simplicity (economy). In trying to get a hearing for my point of view, I have thrown my effort into urging that it is possible, and made no claim that it is simpler. I submit that a point of view might be worth considering even if it doesn't win on the score of simplicity. But I do have one point to make about simplicity; it is a polemical point against current transformational theory, especially of the Interpretive Semantics variety. I anticipate that one common reaction to my proposals will be this: 'Your treatment may be possible in principle, but obviously it will be fantastically extravagant.' My rejoinder is that this is not so obvious. Not that my approach doesn't have its cost, but that the alternative is not as cheap as it looks.

My proposal has been to treat the quantifiers 'all' and 'some' as a part of speech that is not a subcategory of any other. One alternative proposal is to treat them as a subcategory of adjectives. This proposal is described by Jackendoff in Language 47 (1971) 283-97. (It is not his own proposal.)

According to this proposal, a quantifier is in deep structure a predicate; but it falls under an obligatory 'lowering' rule which swings it around from predicative to attributive position. Now from the semantical point of view, this proposal is absurd. Logically, 'all' and 'some' simply are not predicates. It is not violent, or unnatural, or far-fetched, to treat them as predicates; it is impossible. Now of course it is possible to say (or to write) 'VP $\rightarrow$ Qr', but he who does this no longer means by 'VP' or by 'verb phrase' what is commonly meant by these terms. It is within one's liberty to change the meaning of expressions, but not to retain the meaning and yet change the instances that fall under or fall outside of the meaning. That the lowering rule is obligatory is a tipoff; every true predicate has the option of moving but no true predicate is required to move, into attributive position. A true predicate is paraphrasable into possession of an abstraction, e.g. 'is mortal' into 'has (the property) mortality'; quantifiers fail this test. Quantifiers are, approximately, paraphrasable, as was known already to Albert of Saxony; e.g. 'All men are mortal' is roughly paraphrasable as 'Adam is mortal and Eve is mortal and Cain is mortal and Abel is mortal and Enoch is mortal and...'; and 'Some men are mortal' is paraphrasable (roughly) by the same formula, except with 'or' instead of 'and'. True predicates are not paraphrasable in this way.

If, then, we assimilate quantifiers to true predicates, we do it by making them both subcategories of VP. Now it is tautological that if the true predicate is only a subcategory in the framework, then it is not a major category (not a sumum genus,

as logicians would say). But a linguistic framework without true predicates as a major category is not prepared to receive a semantic interpretation along familiar lines, such as the projection rules of Katz and Fodor. Likewise, without quantifiers as a major category, it is not prepared to handle projection rules for them.

But, it may be answered, all one has to do then is to change the system of projection rules. And this answer lets me put my point even more forcefully. If the semantic interpretation cannot be attached ('projected') to 'all' at the outset, but only after it has undergone certain transformations, then the logical properties of 'all' which in any case admit of transformational treatment simply do not get incorporated into the transformational syntax. Such a treatment is both incoherent and extravagant: incoherent because two systems of transformations are merely juxtaposed by an interface, not integrated in any more intimate way; and extravagant---deficient in economy---insofar as the transformations employed in the semantics of 'all' would have made unnecessary the employment of certain transformations in the purely syntactical component.

If simplicity is desirable, isn't it overall simplicity that is desirable---global simplicity, we may call it, as opposed to parochial or local simplicity? And if so, we have to be careful lest certain local gains result in global losses. This danger is recognized by folk-wisdom when it speaks of being penny-wise and pound-foolish; and something similar is referred to when we speak of robbing Peter to pay Paul. Discussions by philosophers of simplicity in recent years have shown increasing awareness of the tradeoff-phenomenon, the kind of situation where a gain in simplicity in one part of the system entails a loss of simplicity somewhere else.

I repeat that I do not claim to have shown, or even made it likely, that my approach will lead to a globally simpler linguistics; but I do claim that the opposite has not been shown either, because the question of cost in the semantic component has not been seriously considered.

There is another idea of Russell's that I propose to exploit, and indeed have been exploiting: his contrast of apparent and real logical form. In general, natural languages distort the real logical form of sentences in various ways. To borrow a term from Wilfrid Sellars (Science, Perception, and Reality (1963) ch. 7, especially p. 226), ordinary languages are not perspicuous. Now whether the concepts of perspicuity and non-ambiguity can be united doesn't matter here; it doesn't matter whether we say that they are two ideals or one; both of them are ideals, or (if they are one) it is an ideal. I will speak of them as two. In any case they are never at odds: it never happens that a transformation which increases ambiguity decreases perspicuity, or vice versa. It is part of my project to implement Russell's idea formally by deriving expressions whose apparent logical form is discrepant from their real logical form from expressions in which the apparent and the real coincide. In general, expressions of the latter sort would be said to belong to artificial languages, such as those of

symbolic logic.

Russell didn't discriminate between one natural language and another, but spoke of natural languages as a single kind. He thus gave the impression, without, however, making any claims, that the same discrepancies of apparent form real logical form are to be found in all natural languages. True or false, this proposition deserves explicit formulation so that we can put it to the test. Of course each alleged discrepancy has to be tested separately; the one that immediately concerns us is that no natural language perspicuously and unambiguously treats the quantifiers 'all' and 'some', in its ordinary style. If any of these universals are true, they deserve rescue from their present neglect; they deserve prominence. But there is no better way to give them prominence than to derive languages---all natural languages---from logic. Far from this being an argument for treating linguistics as unrelated to logic (as already Sapir, in his posthumous paper on "Grading," pp. 125-34 in Mandelbaum's edition, was proposing to do), it shows us the way to relate them, namely, by demonstrating how languages turn away from logic, and how they all turn away at the same places.

But a linguistics which is shaped to fit semantics will yield interesting results no matter whether it is globally simpler than, just as simple as, or less simple than, other approaches. Let me finish by mentioning one such result to which my discussion of quantifiers has contributed. English quantifiers are easily mistaken for adjectives. For one thing, they occupy attributive position like typical adjectives; for another, the difference in meaning between, say, 'All men are mortal' and 'Some men are mortal' is in some respects like that between 'All men are mortal' and 'Rich men are mortal', or between 'Rich men are mortal' and 'Clever men are mortal'. In some of the related inflecting languages, they also inflect like typical adjectives. Nevertheless, they lack one fundamental property of adjectives, namely the ability to function as predicates. (Apparent exceptions are easily disposed of; e.g. in 'These are all', it is collective, not distributive 'all' that is involved.)

The interesting result I have in mind is that there is a genus of pseudo-adjective of which the quantifiers are one species, (a). Here are a couple of others: (b) certain backformations, such as 'mere', 'former', 'apparent' ('a mere figurehead' is to be derived transformationally from 'merely a figurehead', 'former champion' from 'formerly a champion', 'apparent culprit' from 'apparently the culprit'). (c) 'easy' in 'easy to please'. There are significant subspecies which I can only fleetingly notice. Species (b) is locked into attributive position; in predicative position---'this figurehead is mere', 'that champion is former', the result is simply ungrammatical. 'The culprit is apparent' makes sense, but only with a different sense of 'apparent' than the one derived from 'apparently' and contrasted with 'real'. Species (b) admits of both attribution and predication and the paraphrase relation which is characteristic of the true adjective holds: an easy person to please = a person who is easy to please. What is semantic-

ally peculiar about this species is that we have to suppose a different sense of 'easy' in the output than in the input of the transformation that yields it. The alternative is not to assign any sense at all to the items of the output one by one, and to say that the whole sentence 'X is easy to please' is synonymous with the whole sentence 'X is such that to please X is easy'. Either way, 'easy' is a true predicate, but not a predicate of X. What it is predicated of is not what it modifies on the surface, and in this respect it differs from a true adjective.

I have now given some indication, largely by way of examples, of how a semantically oriented transformational theory might be undertaken. I deliberately did it in terms of remodeling existing transformational theory. My rationale was that if we are to fit semantics into a linguistic framework, the linguistic framework ought to fit.

SOME SEMANTICS OF POLYSYNTHESIS
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Especially in polysynthetic languages, words for new objects are often created from descriptions of their functions or other salient characteristics. In many such languages, these descriptions take the form of predictions. The examples below come from Mohawk, an Iroquoian language.¹

- (1) wathóntia'ks
'it cuts grass' → 'lawn mower'
- (2) teiehserhakwenhtenstákhwa'
'one uses it to cause dough to become flat' → 'rolling pin'
- (3) teiódia'ks
'it flickers' → 'movie'
- (4) karistóhare'
'it metal hangs (on it)' → 'shovel'

All of these words are verbs. Because all Mohawk verbs obligatorily contain pronominal prefixes referring to their subjects and/or objects, as well as aspect suffixes, they can function as self-contained clauses as well. This can be seen in the literal translations of the verbs above.

In discourse, no surface markers need signal the syntactic function of such verbs, whether they are used as nominals, predicates, or sentences. The result can be, and often is, discourse which consists predominantly of verbs, or, apparently, strings of predications.

- (5) Rató:rats raiénthos.
he-hunts he-plants.
The hunter plants. or
The farmer hunts.
- (6) Wathóntia'ks teká:naks.
it-cuts-grass it scratches (it)
The lawn mower scratches it. or
The rake cuts grass.

The frequency of these strings of verbs in discourse, unmarked for syntactic function, raises an intriguing issue. To what extent is the distinction between identification (ordinary nominal function)

and predication (verbal function) present in the minds of speakers of such languages?

In this paper, the interpretation of verbal nominals in Mohawk is examined. It is shown that different verbs have been psychologically nominalized to varying degrees, discoverable from three tests: their interpretation under questions, that under negation, and their formal behavior under incorporation.

1. Questions

The first test involves the interpretation of yes-no questions. Such questions are formed in Mohawk as follows. Focussed elements, in the case of questions the element in question, appear word initially. The interrogative particle ken is inserted following this first, focussed, constituent. Just as any type of constituent can be put in focus by fronting, any type can be questioned. In the first example below, a nominal is questioned. In the second, it is the predicate.

- (7) Onwá:ri ken ne Sak shakonðn:we's?
 Mary ? Jim he-her-likes
 Is it Mary that Jim likes?

- (8) Shakonðn:we's ken Onwá:ri ne Sak?
 he-her-likes ? Mary Jim
 Does Jim like Mary?

In the first test, speakers are asked to respond negatively to questions, then supply alternative answers. The test is based on the normal expectation that alternatives tend to be syntactically equivalent to rejected answers. If the speaker interprets the questioned word as a nominal, he/she will probably supply an alternative nominal. If it is interpreted as a predicate, the alternative will be a predicate.

- (9) Model: Q. Takð:s ken?
 Cat ?
 Is it a cat?

A. Iah. Ė:rhar thi.
 No. dog that
 No. It's a dog.

- (10) Q. Satákhe' ken?
 you-run ?
 Are you running?

A. Iah. Tekenonniákhwa'.
 No. I'm dancing.

The results of the question test are interesting. The test effectively separates conventionalized verbal nominals from verbs lacking this conventional function.

The creation of new nominals from verbs is quite productive in Mohawk but it is usually a conscious act. Speakers make up new names for things constantly, but frequently discuss the relative merits of competing neologisms. Different speakers select different characteristics by which to identify an object. Different communities develop different labels. When asked for a word for 'mitre box', one speaker replied,

- (11) "tekahson'kária'ks... No, that would be more like a saw.
(it cuts boards)

A better name would be

katakwarfhsions."
(it untwists (→ straightens) it)

As would be expected, such unconventionalized descriptions are interpreted as verbs under questioning.

- (12) Q. katakwarfhsions ken?
It straightens it = mitre box ?

A. Iah. Tekakwá:ris.
No. It twists it.
(Not: No, it is not a mitre box.)

The identifying function of conventionalized descriptive nominals is retained under questioning, however. The alternative answers show that these verbs were interpreted as nominals.

- (13) Q. Kanon'tfisen ken?
it-milk-spoiled = buttermilk ?

A. Iah. Kwah tekén onón:ta'.
No. Just milk
No, it's just (regular) milk.

- (14) Q. Ratétien'ts ken?
he-cures = doctor ?

A. Iah. Karfhton thf.
No. He is a policeman.

The fact that the interpretation of the function of these verbs depends upon convention and not something inherent in the word itself is shown by the following example. Speakers from two different Mohawk communities respond differently to the question:

- (15) Q. Iónhnhe' ken?
it-is-alive = jello ?

A. Caughnawaga: Iah. Akarè:t thf:ken.
No. Cake that
No. That is cake.

A. Ahkwesahsne: Iah. Ionhé:ion.
No. It is dead.

Numerous jokes arise from the differences in conventionalized interpretations among communities. When a woman from Ahkwesahsne was asked what her husband did for a living, she proudly replied:

rarista'kehró:non'
'he-iron-on-resides' → 'He is an ironworker'.

A great peal of laughter greeted her innocent remark in Caughnawaga, where the verb is interpreted:

→ 'he rides the rails' 'He is a hobo'.

2. Negation

The second tests involve negation. First, verbal nominals are negated in the normal way, by preceding them with the negative particle iah and the negative prefix te-/th-. Bilingual speakers are then asked to translate the phrase.

Surprisingly, under simple negation, most verbal nominals are interpreted as predications, whether they are conventionalized as nominals or not. Note the discrepancies between the translations of the positive and negative verbs below. (They were not elicited together initially, but results remained the same when they were.)

- (16) kà:sere'
car

iah tekà:sereh
it doesn't drag

- (17) ratétien'ts
(he is) a doctor

iah tehatétien'ts
he is a bad doctor (< he doesn't cure)

Next, speakers were asked to complete negative statements. The information they chose to add, underlined below, is also revealing. The negative verbs are clearly interpreted as predicates; they do not identify.

- (18) (rató:rats)
(he hunts → a hunter)

Iah teható:rats. Réntskote'
not does-he-hunt. He is sitting.

- (19) (wenhetshò:ron)
(it-crust-under-is → pig in a blanket²)

Iah tewenhetshò:ron. Iah nòn:wa.
not it-is-crust-under. Not today.

The fact that verbs generally revert to their predicative function under negation produces a result which amuses Mohawk speakers. Translations of straightforward English sentences can appear superficially contradictory in Mohawk, but they are perfectly meaningful.

- (20) This mitre box doesn't straighten (corners).
Iah tekatakwaríhsions, ki: katakwaríhsions
not does-it-un-twist this it-un-twists

- (21) That doctor doesn't cure.
Ratétien'ts iah tehatétien'ts
he-cures not does-he-cure

The verbal origin of some deverbal nominals has long since vanished from memory. These words become meaningless under negation.

- (22) atekhwà:ra
it/it-food-set-on
table

(iah tewatekhwà:ra)
?

A probable factor in the pressure to interpret all deverbal nominals as predications under negation is the fact that this form of negation is morphologically incompatible with formal nouns, even though they contain pronouns just like verbs.

- (23) onòn:ta'
it-milk

*iah teyonòn:ta'

An alternative mechanism exists for negating nouns, something of the sort 'it is not the case that that is an X.' The negative prefix te'- is affixed to a dummy verb following the noun.

- (24) Iah onòn:ta' tè:ken.
 not it-milk (not)-is-it
 It is not milk.

When this type of negation is used with deverbal nominals, an identifying interpretation is possible.

- (25) Iah kà:sere' tè:ken, kahonwé:ia' f:ken.
 not it-drags (not) is it it-boat is-it
 It is not a car but a boat.
- (26) Iah teionthnekontákhwa'³ tè:ken, ó:wise' thi:.
 not does one use it to pour liquid (not-is-it, it-glass this)
 That is not a cup but a glass.

If the verbs in (25) and (26) were interpreted as predicates, the sentences would not make sense.

3. Incorporation

The third test involves noun incorporation, frequently found in polysynthetic languages. In Mohawk, a noun stem referring to the semantic patient of a predication can be incorporated into the verb itself, between the pronominal prefix and the verb root.

- Intransitive
- (27) Kowá:nen ne otsi:t'sa' → katsi'tsowá:nen
 it-big-is the it-flower → it-flower-big is

- Transitive
- (28) Wa'khní:nón' ne otsi:t'sa' → wa'ktsi'tsahní:nón'
 past-I/it buy the it-flower → past-I/it-flower-buy

In the intransitive sentence, the incorporated semantic patient is the surface syntactic subject. In the transitive sentence, the incorporated semantic patient is the surface syntactic object.

Verbal nominals do not behave exactly like formal nouns under incorporation. Note that the simple noun root -tsi'ts- 'flower' is incorporated as is, above. Verbal nominals are not. Although the verbal origin of a nominal may have long ago left the consciousness of speakers, it resurges formally when the nominal itself is incorporated into another verb. An overt nominalizer, like the -tsher- below, is required.

- (29) Kowá:nen ne atekhwà:ra → watekhwahra'tsherowá:nen⁴
 it-big-is the table (it/it-food-set-is) → it-table-big-is
- (30) Wa'khní:nón' ne atekhwà:ra → wa'katekhwahra'tsherahní:nón'
 past-I/it-buy the table → past-I/it-table-buy

Noun incorporation thus serves to separate nominals of verbal origin, whether speakers are aware of it or not, from simple, formal nouns. Derived nominals require nominalizers.⁵ Original nouns do not.

4. Conclusion

It has been shown that the distinction between identifying and predicative function is, indeed, present in the minds of Mohawk speakers, even in those cases where the same form can be used for both functions. The difference between interpretations of descriptions as identifying, so pre-supposed, versus predicating or asserted, can be seen in the alternative answers supplied to yes-no questions.

The degree to which specific verbs have been psychologically nominalized appears to be largely a function of usage and convention. This degree can be identified by the interpretation of the word under questioning and negation, and by its behavior in noun incorporation. The tests reveal four degrees of nominalization or "nouniness", here arranged from least to most.

A. Spontaneous, unconventionalized descriptions

1. Used as nominals on occasion but interpreted as verbs under interrogation without context (V)
2. Interpreted as verbs under negation (V)
3. Require nominalizers under incorporation (V)
VVV

B. Conventionalized verbal nominals of whose verbal origin speakers are conscious

1. Interpreted as nominals under interrogation (N)
2. Interpreted as verbs under simple negation (V)
3. Require nominalizers under incorporation (V)
NVV

C. Conventionalized verbal nominals whose verbal origin is not remembered

1. Identified as nominals under incorporation (N)
2. Meaningless under simple negation (N)
3. Require nominalizers under incorporation (V)
NNV

D. Formal nouns

1. Identified as nouns under interrogation (N)
2. Meaningless under simple negation (N)
3. Incorporated without nominalizers (N)
NNN

NOTES

1. I am especially grateful to Miss Mary MacDonald, of Ahkwesahsne, New York, and Mrs. Annette Jacobs and Sister Dorothy Lazore, of Caughnawaga, Quebec, for their generous help with the Mohawk examples.
2. This is a sausage covered with a deep fried crust.
3. The prefix te- on this word is the daulic, indicating a change of position, not to be confused with the negative prefix.
4. The neuter pronoun ka- takes the form w- before a- initial stems.
5. An unexplained exception is the word for pencil. Compare the two words below:

kahiatonhkwf:io
 it-'write'-instrumental-'nice'+perfective aspect
 nice pencil

kahiatonhkwahtsherf:io
 it-'write'-instrumental-nominalizer-'nice'+perfective aspect
 nice writing instrument

MEANING AND CHANGE OF MEANING: LOGIC IN HISTORY

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It is well known that at an early stage of Common Slavic, adjective declension had two forms, most neutrally called the long form and the short form. Formally, the short form declension was identical to the most widespread noun declension in Old Church Slavonic; and the long form can conveniently be treated in Old Church Slavonic as identical to the short form plus the declined forms of the enclitic pronoun *i*. It is generally accepted that the appearance of the long form (that is, the 'adjective plus *i*' collocation) was triggered by definiteness, which I will treat as a feature on NP. The pattern of long and short form derivation can be represented as follows:

$$(1) \left[\text{Adj} - \text{N} \right]_{\text{NP}_{\text{case/gender/number}}} \longrightarrow$$

$$\underbrace{\text{Adj}_{\text{c/g/n}} - \text{N}_{\text{c/g/n}}}_{\text{'short form'}}$$

$$(2) \left[\text{Adj} - \text{N} \right]_{\text{NP}_{\text{definite case/gender/number}}} \longrightarrow$$

$$\left[\text{Adj} - \underline{i} - \text{N} \right]_{\text{NP}_{\text{c/g/n}}} \longrightarrow$$

$$\underbrace{\text{Adj}_{\text{c/g/n}} - \underline{i}_{\text{c/g/n}} - \text{N}_{\text{c/g/n}}}_{\text{'long form'}}$$

Because of the NP domain of the rule creating the long forms, no adjective could appear in the long form unless it was dominated by NP; for this reason, nearly all predicate-position adjectives in Old Church Slavonic were short forms. This state of affairs is essentially like that in other languages that mark definiteness on adjectives, for example Arabic. The distribution of the long and short forms in Old Church Slavonic is well known, and need not be discussed in detail here.

The following paper describes the changes connecting the early East Slavic adjective system with the modern Russian one.

At Stage 1 (early Common Slavic), long-form marking (hereafter referred to as LF marking) was unstable for at least two reasons: first, the long-form endings included numerous combinations VjV, which in Slavic were subject to contractions that became so extensive as to obscure the long-form/short-form distinction entirely for some parts of the paradigm. Second, as Vaillant observed, definiteness marking did not apply to all definite NPs, but only to NPs containing adjectives. For these reasons, the rule was dysfunctional and was lost.

In East Slavic the two sources of instability in the rule were each reflected in the rule's subsequent, but still prehistoric, development. First, the long-form desinences generated by (2) were replaced with desinences borrowed from pronoun declension; and, second, the rule ceased to refer to a feature 'definiteness' on NP. Consequently, for early East Slavic, the rule worked something like (3):

$$(3) \quad [\text{Adj} - \text{N}]_{\text{NP}} \rightarrow [\text{Adj}_{\text{LF}} - \text{N}]_{\text{NP}}$$

Rule (3) marked adjectives dominated by NP as long forms; it replaced Rule (2). Rule (3) can be treated as optional, since not all adjectives fitting the structural description at the surface level are marked by the long-form rule; however, it is shown below that the operation of (3) can more adequately be characterized as operating obligatorily at a deeper level of structure. The casemarking rule (1) above applied to all adjectives in NPs, resulting in appearance of a long or short form, depending on whether or not Rule (3) had already applied. This is Stage 2 of the development, well attested in early East Slavic.

At this stage, Adj dominated by NP was subject to two marking rules, both conditioned by the same environment. All Adj dominated by NP were marked for case; only some were marked as long forms, namely those that were NP-dominated at an earlier stage of derivation. In the subsequent history of East Slavic, the domain of LF marking was extended to all casemarked NPs. At the end of Stage 2, which is still represented in formal standard speech, all Adj case marking is realized as LF marking, and Adj declension has been unified and definitively separated from noun declension. Viewed symptomatically, Stage 2 exhibits generalization of the long-form attributive adjective, the loss of the casemarked short form, and the loss of a syntactically conditioned rule of long-form marking. More mechanically, the level at which the syntactic rule of LF marking operated seems to have changed to a more superficial one and finally completely morphologized. In modern Russian the short form is disappearing even from environments where there is no reason for positing case marking. Thus, at a hypothetical future stage, Russian adjective morphology will have been simplified to eliminate

long-form/short-form pairs. Starting from a situation in which adjective morphology reflected the semantic or discourse status of NPs, the marking came to reflect only the status of the adjective itself with respect to S-internal structures; and finally the short form is becoming a stylistic variant in adjective morphology.

Consider now the conditions under which LF marking applied at the beginning of Stage 2. In general, LF marking failed to apply in NPs where the adjective represents a new predication on its head noun; but where the adjective cannot be treated in this way, then LF marking applies.

Only short forms occur in constructions derived from complex sentences; the only exception to this rule is certain constructions apparently derived from restrictive relative clauses.² Thus, only the short-form participle occurs in absolute constructions, for example the following one?

- (4) i mně tu suščju ... prisla po mę knęz' davyd"

& me_{dat} there being_{dat,short}...sent for me prince David

'And while I was there Prince David sent for me.'

Adjectives and participles modifying raised objects are always in the short form:

- (5) slyšavše se stopolk" idušča jaroslava

having-heard thus Svętopolk coming_{acc,short}
Jaroslav_{acc,short}

'When Svętopolk heard that Jaroslav was coming ... '

- (6) i vidě ju dobru suščju

& saw her_{acc} good_{acc,short} being_{acc,short}

'And he saw that she was good (looking).'

Compare also the following:

- (7) vezoša i bolna
they-carried him_{acc} ill_{acc,short}

- (8) svolokoša soročku krovavu suščju

they-took-off shirt_{acc} bloody_{acc,short} being_{acc,short}

'They took off his shirt, for it was bloody.'

In all the examples (4)-(8) above, it is obvious that the short forms do not originate as attributive adjectives, if only because the modified forms--pronouns in (4), (6), and (7) and a proper noun in (5)--do not normally take attributive adjectives. At the same time, since case marking has applied to all the short forms in these examples, and since case agreement in Old Russian has no other known source than domination by a shared NP, then the adjectives and the modified forms must be dominated by a common NP at the point where case marking applies, and presumably in surface structure as well. Trivial rule ordering gives the right results for short-form adjectives that are derived from nonattributive (or nonadjectival) sources, without adding any conditions to Rule (3): the rule fails to apply to the examples above because they fail to meet its structural description.

However, the short-form attributive also occurs in constructions where there is no structural evidence of such derivation. The following sentence

- (9) v toi soročkě krovavě
 in that shirt_{loc} bloody_{loc,short}
 in that shirt, bloody as it was

typifies the class of short-form attributive constructions containing a demonstrative. Another common environment for short-form attributives is contrastive position:

- (10) ne razuměem" ni greč'sku jazyku ni latyn'sku
 not understand neither Greek_{dat,short} language_{short}
 nor Latin_{dat,short}
 'We do not understand either Greek or Latin.'

Cf. the long form in (11), where it is the head that is contrastive:

- (11) ne razuměem" knižnago obraza ni sily ix"
 not understand of-books_{gen,short} symbol_{gen}
 nor force_{gen} their
 'We do not understand books' signs nor their force.'

The fact that the presence of a demonstrative or contrastive emphasis on the adjective blocks LF marking suggests that the use of the short form is correlated with informational value. Now consider the following pair of examples:

- (12) i byst' bran' ljuta
 'And there was a fierce_{short} battle.'

- (13) ot rati ljutyja 'from a fierce_{long} war'

In (12) and (13), the adjective ljut 'fierce' occurs once short and once long; each usage typifies a rather large class of occurrences. In (12), the sentence states that a battle took place, and further characterizes that battle as fierce; (13), on the other hand, occurs in a plea to a princess to marry a politically suitable prince whom she dislikes: 'Marry him, and in this way you can save us from a fierce war'. The war from which the speakers are to be saved is so far only hypothetical, not actual, and for this reason its characterization as fierce is also hypothetical, referring to the general character of all wars. Narratives with vivid, or at least concrete, descriptions tend to have short forms, as in (14) and (15):

- (14) viděx" bani dreveny 'I saw baths of-wood_{short}.'

- (15) jugra že ljud'je est' jazyk" něm"

'Now the Jugra people are a tribe
without-a-language_{short}.'

In each example, the speaker is applying a simple, empirically verifiable description to a specific object of discourse, bani 'baths' and the Jugra tribe. Note in (15) that the short form modifies a semantically empty head in the predicate of a copular sentence whose subject is a proper noun; this is a common environment for short forms. Semantically, něm is virtually a predicate adjective, since little or no information would be lost if the head noun jazyk 'tribe' were absent.

Compare, by way of contrast, examples (16)-(18):

- (16) kuril" jarusalimskii. 'Cyril of-Jerusalem_{long}'

- (17) vsěvoložjuju. 'Vsevolod's (wife)'

- (18) zlomu ubiistvo. 'evil_{long} murder'

In each example, the long-form adjective represents a conventional attribute; it does not provide new information about a specific individual, whose existence is already established through some other attribute; instead, the use of the adjective reflects opinion or conventionally assigned status. All $\emptyset$ -form head nouns, like (17), take long-form attributives; according to the present analysis, this is because the adjective is not providing new information about an already established discourse referent.

The details of long and short form distribution provide interesting new material for a theory of discourse structure; but this goes far beyond the scope of this paper. It should be noted, however, that the well-known variation of certain adjectives with respect to the use of long and short forms can be treated in the

general framework that has been briefly sketched here. Typically, adjectives that show apparently unmotivated variation are those that are in the process of conventionalization, but whose descriptive value can still be evoked. This is particularly common with place-name adjectives, such as ruska (zemle) 'Russian (land)'. The short form ruska occurs where the Rus' people and their settlement of their lands figure prominently in the narrative; elsewhere, the long form is used.

The short-form attributive apparently occurs only if the attributive construction can be paraphrased with a statement of the form: 'There exists some X, such that X is N (the head noun) and X is Adj (the short-form adjective)'. Cf. the definition of predicate adjective used, for example, by Parsons. Some of his nonpredicative adjectives (for example, adjectives of size) are regularly short in early East Slavic; interestingly, these exceptional adjectives were among the first to lose the short form in predicate position. Their behavior warrants separate study.

The main point here is that when the long-form/short-form distinction lost its original motivation, namely definiteness, the new conditions that came to apply to the rule were a simple extension of the sole remaining regularity of adjective usage: predicate adjectives had always been primarily short forms, and the attributive adjectives that continued to occur in the short form were precisely those that could most readily be interpreted as basically predicative. Thus, LF marking applied to attributive adjectives that were basically attributive; the short form occurred in attributive constructions of a more complex type, namely those that were derived from predicates. This complexity eventually ceased to be coded in LF marking of adjectives.

Statistically, the great mass of early East Slavic data is very close to what is found in Old Church Slavonic as well; but certain crucial examples show that a change has occurred. Thus, Honowska observes that adjectives in constructions modified by demonstratives were always long forms in Old Church Slavonic, since they had to be definite. In early East Slavic, on the other hand, the short form regularly occurred in such constructions, for example in (9) above. In (9), the bloodiness of the shirt is its most salient feature: the speaker wishes he had died in that bloody shirt, because (he goes on), if he could have presented himself before God covered with blood, God would have rewarded him for all his tribulations. Thus, the marking of (9) is conditioned by the descriptive value of the adjective, not by the definiteness or any other feature of the NP in which it occurs. In comparing the early East Slavic data with the data from Old Church Slavonic, we find a minimal amount of change, and hence maximal continuity, while nevertheless we are clearly able to distinguish the effects of grammatical restructuring.

The order of events can be viewed as, first, loss of

definiteness, leading to the development of something like Rule (3) in the grammar of East Slavic; second, gradual implementation of the new rule by degrees.⁴ When Rule (3) had been fully implemented, it applied to exactly the same class of adjectives as case marking did. In modern Russian some long forms are apparently produced without distribution of case marking from any dominating NP node; and LF marking is becoming simply an unmotivated fact of modern Russian adjectival declension. The history of LF marking is thus correlated with the development of modern Russian parts of speech and with case marking; both of these areas still need further study.

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¹The formulation of Rule (3) assumes that there was in Old Russian no rule attaching enclitic *i* to Adj, as in (2); but for present purposes it is immaterial whether the long form was generated by a simplified Rule (2) followed by morphological substitutions, or by Rule (3) followed by case marking.

²These are the long-form participles, for example ljudi tu suščaja 'the people that were there'. These forms, however, are rare and occur mainly in quotations from Church Slavonic religious literature.

³Examples (4)-(17) are from the Laurentian Ms. of the Primary Chronicle (Karskij edition); (18) is from the Synod Ms. of the 1st Novogord Chronicle (Nasonov edition).

⁴The results presented here tend to confirm a reanalysis/actualization model of change such as that proposed by Andersen.

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The world is emblematic. Parts of speech are metaphors, because the whole of nature is a metaphor of the human mind. ²

All things are double one against another, said Solomon. The whole of what we know is a system of compensations. Every defect in one manner is made up in another. Every suffering is rewarded; every sacrifice is made up; every debt is paid. ³

As it is not possible to lay down rules for every word, as the rules again are not perfect, and as even in them slips and errors are found and consequently there is no finality in the science, grammar is a fatal disease, which baffles the skill of the physician at every step, the symptoms of which are not permanent, and in the diagnosis of which the physician is apt to make mistakes. ⁴

0. Several recent papers evidence that parts of the ancient physis-nomos and analogía-anōmalía controversies are very much alive today, especially insofar as certain kinds of regularity in language are concerned. Cooper and Ross (1975), Becker (1978), and Malkiel (1977) all deal with some facets of convention in the symbolization of meaning in language. It is to be hoped that the present paper uses some of the insights of Becker, Malkiel and Cooper and Ross to establish that certain semantic regularities of a language can be reflected in formal phonological regularities. There are two hedges built into the preceding sentence, one being the emphasized indefinite article, and the other the use of the modal 'can' in contradistinction to other English modals (e.g. must, will). Stated as a universal, the principle of phonetic regularity is of a most trivial nature (viz. 'semantic regularity is reflected in phonetic regularity'); it is left to the individual culture within which a language is spoken to decide which 'objects', 'states', 'qualities', 'actions' and so on are to be classed together to fall within the realm of a particular phonetic form.

1.1. There is sufficient evidence to suggest that every living language exploits some principle of form-meaning identity in the process of borrowing, in spontaneous generation and in renovation of older forms, which is here conceived of much like the

procès de renouvellement of Kurylowicz (1956 and elsewhere). Paradigmatic form-meaning identity is most certainly plausible as an explanation of 'new' or 'coined' words. While it may be disputable that the English word quiz is a 'new' word, as has been claimed, the association of quiz with terms like question and quest is defensible on both semantic and formal grounds. If indeed quiz is a coined term, perhaps the initial labio-velar and the alveolar groove fricative of question and quest provide a paradigmatic model for the coinage even though there may be no actual derivation involved. In essence then, there appear to be two kinds of 'etymology', one 'vertical' (chronological, through time) and hence truly derivative, and the other 'horizontal' (synchronic, or within a time frame) and, at best, quasi-derivative. Each kind of etymology may provide raw material for the other. For example, Bloomfield (1933: 245), in positing a "root-forming" morpheme -ash meaning 'violent movement' in the set bash, clash, crash, dash, flash, gash, may have been suggesting a horizontal association rather than a derivative association. Theoretically, it would be possible for the inventory of the set to increase or decrease depending on the relative strength or functional yield of the association. It should also be noted that if the forms in Bloomfield's set are interrelated, such an association is commonly below the level of conscious awareness of the native speaker. In section 4 it can be seen that unconscious association is frequently made through other non-linguistic and linguistic behavior. Thus, while it could be argued that the noun cash may not contain the same "root-forming" -ash as Bloomfield's set (to which could be added mash, gnash and others), the verb to cash contains traces of 'violent motion', as is evidenced that stylistically break can be substituted for cash in utterances of the form Can you cash a ten? and that to cash almost always implies an exchange of a large denomination for smaller denominations and not the reverse.

1.2. The foregoing is not intended to suggest that derivation or inflection are inappropriate frames for conceiving of the expansion of language; rather, it would appear that there are forms that resemble one another in some obvious fashion, that physical resemblance is confirmed by the meanings associated with the forms, and that the sets of forms may share a common etymon or common etyma, but no one term can be considered to be the root or base from which the others are derived synchronically. There may be seductive evidence to suggest a possibility of derivation, but cases of such are generally entrapments. For example, English penalty could be considered a derivative of pain, in which a tense vowel is relaxed with the shift of accent accompanying affixation, but dialectal penal ([píy-n]), considered the most common pronunciation, shows an ablaut grade different from that of penalty; if one considers penal to be the zero degree of the same root as pain, further problems crop up in the form punishment, which is undeniably associated with penal and pain.

2.0. There are several ways in which formal regularity in symbolism has been treated, but with rare exception analysts have

met with most success when they contain themselves to detailed description of one language or two closely related languages. 2.1. Malkiel (1977: 513-514) summarizes three chief manifestations of phono-symbolism: 1) onomatopoeia, that is, the attempted emulation of a sound sequence; 2) the artistic exploitation of the potentialities for emulation, in which a poet "... (through) goal-directed selectivity ... without minting any new words, strings those that his medium obligingly offers him in such fashion as to suggest certain quickly recognizable sound effects: the cascading roar of a waterfall, the rumbling of an approaching storm (etc.)" (Malkiel 1977: 513); 3) the association between a sound and a grammatical feature, as the use in several Semitic languages of a back vowel in the first stem syllable or in the prefix of a verb to indicate the passive voice.

In addition, Malkiel also carefully distinguishes between relative phonosymbolism and absolute phonosymbolism, the former of which is exemplified by the learned or erudite quality attributed to native English speakers who affect "correct" French pronunciation for borrowings such as petit beurre, genre and so on. Absolute phonosymbolism, generally considered less worthy of attention by most, is exemplified by Jespersen's (1922) claim (supported by Sapir (1929)) that in practically all languages of the world the phoneme /I/ either has or easily acquires hypocoristic or diminutive force. Malkiel also suggests that there may be a middle ground between relative and absolute, where certain phonemes in many (distantly related) languages exhibit a symbolic force, as is the case for the hypocoristic sense of /š/ and /č/ in some Russian names (e.g. Natasha, Sasha), the Italian suffixes -accio, -iccio, -occio, -uccio and the Spanish suffixes -acho, -icho, -ucho.

2.21. Malkiel (1977) also considered the important operation of duplication in language, as in the (relatively small) class of Latin reduplicative perfects (e.g. cadō 'I fall', cecidī 'I fell') and he echoes Sapir and Jespersen in claiming that English semi-jocose forms like wishy-washy, namby-pamby, higgledy-piggledy merit the same kind of attention as more 'legitimate' forms like the Latin reduplicative perfects. Malkiel's evidence suggests that the Latin perfects are mostly morphosymbolic, as the reduplication operates without regard for the vowels of the base form and does not seem to be restricted to stems containing special classes of consonants. On the other hand, the English semi-jocose forms seem to be both phonosymbolic and morphosymbolic, as they contain consonant and vowel ablaut in addition to some kind of duplication.

2.22. The English semi-jocose forms and others like them have also attracted the attention of Cooper and Ross (1975), who have been able to posit rules which account for the fixed order of the lion's share of these forms, some of which have been described as irreversible binomials by Malkiel (1959). Cooper and Ross call these compounds freezes and suggest that they share some features with other conjuncts that are composed of otherwise free morphemes frozen in an order for what are termed

'idiomatic' functions (e.g. friend or foe). The free morpheme conjuncts seem most generally to be ordered in American English in accord with a semantic continuum that dictates that these items closest to the speaker in time, space, species, and so on occur in the first position of the conjunct (the 'Me First' principle, Cooper and Ross 1975: 67).

The English semi-jocose forms, which are generally bound to one another in a morphological process (Sapir 1921, Jespersen 1961, Malkiel 1977), are ordered in accord with phonological principles which apply as well in the event that the semantic cline is to be disregarded. Cooper and Ross (1975: 71ff) discovered these conditions through comparison of the second element of the conjunct with the first. Second place elements are more likely to have: a) more syllables; b) longer resonant nuclei; c) more initial consonants; d) a more obstruent initial segment than that of first place elements when both first and second place elements have one initial consonant; e) (nuclear) vowel containing a lower second formant frequency, which is to say that vowels are ordered: i > I > E > æ > a > ɔ > o > u; f) fewer final consonants; g) a less obstruent final segment than that of first place elements when both first and second place elements have final consonants (Cooper and Ross 1975: 71). Those English freezes which are composed of two totally-bound morphemes that occur only in the presence of one another (e.g., riff-raff, namby-pamby) are rigidly bound by these phonological criteria. Most noteworthy is that freezes containing two interdependent, bound morphemes have two prominent features: 1) either consonant or vowel apophony, but not both, and 2) at least two identical segments in each morpheme in identical positions, viz. riff-raff, namby-pamby. A possible exception is bee-bop (there are undoubtedly others), but this is most likely an onomatopoeitic form. In addition, bop seems to have attained independent morpheme status.

2.3. In his essay on the Javanese wayang kulit, the shadow (puppet) theatre, Becker (1978) has described the intricate interweaving of patterns of thought and patterns of language in a texture far different from those found in Western culture. However dissimilar the fabric of Javanese text may be from Western texture (compare Becker 1978 with Labov and Waletzky 1966), it is likely that Becker has discovered facets of language that are nonetheless relevant to Western languages but less obviously so than they are in Javanese. While it is not possible here either to describe the wayang in any detail or to summarize fully Becker's skillful, artistic description of this aspect of Javanese culture, it is worthwhile to mention several relevant details at the risk of damaging their integrity, taking to heart Becker's observations about the way in which textual units relate to one another to affirm coherence in a text.

2.31. The Javanese have exploited their historical exposure to many languages such as Sanskrit, Dutch, Arabic, English, Kawi and others in the shadow theatre, within which is included the entire history of the Javanese literary language, from Old

Javanese and Sanskrit, through Arabic and the colonial languages up to Bahasa Indonesia and Modern American English. 'History' here does not imply that the language of the wayang reflects its development in time just as English reflects its history in its vocabulary, syntax and phonology. In the wayang, each language is used for a specific purpose, such as when American English is used by one clown to instruct another. Part of the skill of the dalang ('puppeteer') is manifest in his facility in the different languages. Becker has indicated this use of different languages is but one way of contextualizing the past in the present. This device and others (e.g. the appearance of non-contemporary heroes and the characters in the same 'time' frame, which would be almost like putting "... Gatsby, Godzilla, Agamemnon, John Wayne and Charlie Chaplin ... in the same plot.." (Becker 1978: 23)) have the effect of highlighting coincidence, which is as important to Java as temporal sequence is to the West.

2.32. However, another talent much desired in the dalang is invention. At certain points in the wayang performance, he is expected to elaborate on the story with commentary which frequently takes the form of what can best be described as a kind of etymology. The etymology can be serious or humorous, depending on where in the plot it is given, but the etymology is rendered as though the word or expression, irrespective of its origin, were indigenous to Javanese. For example, Becker witnessed the following commentary:

The king who ruled this land is called Maha Prabu Niwata Kawaca. And his name means 'one who wears armour that may never be pierced' which, in our time, means 'one who could not be defeated' for he and all his people believed that, and acted as if that were true. His name is made of three words: Ni, Wata, and Kawaca. Ni or nir is from the word nirwana. Nirwana means freedom from desires, freedom from the past, freedom from the future, something which cannot be likened to anything. In other words, the Great God. Wata means blind, without vision. Kawata comes from Kaca, which means mirror. Hence, his name, Niwatakawaca, means a mirror that is broken, a mirror which has lost its ability to reflect the truth, the Great God. When he was young he was called Nirbito, which comes from Nir and bito. Nir is, as was said, from Nirwana. Bito means afraid. For although all feared him, he was himself a coward and turned away from the Great God (Becker 1978: 45-46).

Becker reports that he first reacted to this and other such etymologies as would perhaps any Western linguist: he felt uncomfortable because some of the etymologies were 'wrong' in that they ignored the 'real' etyma of the words, and he dismissed these commentaries as fanciful. However, when he looked closely at the fabric of Javanese culture, he began to understand that the dalang's etymologies actually were vital to appreciation of the wayang as a whole and to appreciation of the role the wayang plays within Javanese culture and the role Javanese culture plays in the wayang.

2.4. In a discussion of derivations (or perhaps more appropriately "associations") of the type used by Horne Tooke in The Diversions of Purley, Jonathan Culler exhibits an attitude similar to Becker's initial reaction to the dalang's etymologies. Tooke's associations seem much like those of the dalang:

Here is Tooke on the root bar:

A bar in all its uses is a defence: that by which anything is fortified, strengthened or defended. A barn is a covered enclosure in which the grain, etc. is protected or defended from the weather, from depredations, etc. A baron is an armed, defenceful, or powerful man. A barge is a strong boat. A bargain is a confirmed, strengthened agreement ... A bark is a stout vessel. The bark of a tree is its defence ... (Culler 1976: 56).

Culler notes that Tooke's associations (and perhaps, by implication, the dalang's etymologies or even Bloomfield's -ash group) are more properly called philosophic etymologizing. That this kind of activity nettled the Junggrammatiker is well-documented, but insofar as the discomfort stems from an epistemological perspective that informs a particular notion of truth, the attitude of Western linguistics that puts Tooke's associations, the dalang's etymologies and others like them to scorn must be treated as a cultural fact. The same treatment must be afforded Emerson's speculation about the Law of Compensation, quoted at the beginning of this paper.

3.0. It is now possible to suggest that there may exist a kind of lateral coherence among entities of a language, though such coherence must be registered in a fashion somewhat more refined than that of Tooke.

3.1. The following set of terms can be considered to share some kind of semantic feature in addition to the fact that all the forms show vowel apophony between the /p/ and /n/ and some manner of affixation:

A	B	C	D	E
pain	pension	panic	pawn ('chess	pendant
punish	compensate		piece')	pendulum
penalty	responsible		peon ('servant')	
penal	respond			
pang	pawn (as in			
pun	<u>pawn shop</u>)			
	peon (= 'one			
	indentured')			
	pander			
	pound/pint			

Table 1. /p_n/ and balance.

This set is not intended to exhaust the inventory of related /p_n/ words; such a task is well beyond the scope of this paper. The criteria used in the taxonomy in Table 1 are somewhat capricious and ad hoc. All these terms came into English at different

times from different sources. The claim is not made here that they are derived from one another, but that they adhere to one another in a fashion that is perfectly consistent with some presuppositions of Anglo-American culture.

For set A, the particular association between pain and punishment has been shown to be one of long standing in Western culture (Fabrega and Tyma 1976a, Meillet 1903: 343-345, Benveniste 1948). The association appears to be endemic to Western culture, as pain is conceived of much differently in other cultures such as Thai and Japanese (Fabrega and Tyma 1976b). Fabrega (1978) has also indicated that another cultural aspect to pain that sets the West apart from other cultures is the degree to which the individual assumes responsibility for causing his own discomfort; many non-Western cultures attribute pain and disease to more 'cosmological' or other-worldly sources. Pain can be cosmological (e.g. the pains of hell), but in such a case it appears to be metaphoric. Pangs are considered signs of want or need or are associated with the quality of sorrow, which through sorry and sore is itself associated with pain (Fabrega and Tyma 1976a). Pun is somewhat marginal to this group, especially in that it is restricted to the realm of language, but it would seem hardly fortuitous that the most common reaction to a pun is a groan or some other expression of discomfort.

Set B represents /p_n/ terms of balance par excellence. The relation of pension to compensate is indeed a strong one. To pawn something is to secure some manner of the value of an item in particular circumstances. Originally a peon was a servant who was indentured to pay off an indebtedness; some sense of this is still much alive in the modern gloss, which suggests an individual who must do anything he is asked in return for the favor of employment. To pander is 'to satisfy', and the connection to pang is inescapable, but because of its more pleasurable or hedonistic association it perhaps belongs apart from set A. Pound and pint are interesting cases in themselves--together, they are the focal point of the English system of weights and measures. The adage 'Two cups per pound the world around' bears witness to the fact that at one point the weight of one pint of water was one pound. It is thus no mere coincidence that one gallon, eight pints, of water weighs slightly more than eight pounds, subject to variation with temperature and pressure fluctuation.

Sets C and D have senses somewhat marginal to the senses common to Sets A and B. Nonetheless, panic⁵ is seen as the result of severe fright or confusion, just as a pain can be seen as the result of an injury. Pawn and peon in Set D have been set apart from the pawn and peon in Set B in deference to the fact that the senses 'chess piece' and 'lowly person' are perhaps more prevalent than the senses in Set B. In these senses, pawns and peons are seen as having no will of their own and as being manipulated or motivated. In American English, a low-level functionary can disavow responsibility for his behav-

ior by claiming to be a pawn or peon.

3.2. There is yet another complement of /p_n/ terms which seem to adhere to one another yet seem to have no direct relation to the terms discussed in section 3.1.

<u>F</u>	<u>G</u>	<u>H</u>
pin	point (substantive)	penetrate
pen/pencil	pinnacle	point (verb)
penis	penthouse	pound (verb)
pine ('tree')	pimple	punch (verb)
pennant	puncture (sub-	puncture (verb)
pawn ('chess piece')	stantive)	
punt ('long narrow boat')		
punch ('awl') ⁶		

Table 2. /p_n/ and shared physical characteristics.

Sets F and G differ from set H on more or less syntactic criteria, while set F differs from set G in a quantitative fashion: the phallic associations of the terms in set F are inescapable, while the terms in set G seem to be more indicative of 'tip' or 'top'. Each item in Table 2 has different etyma from the others; in the so-called historic languages, each is still separate.

Set F presents a most interesting set of associations. Although pen and pencil generally have senses of 'feather' in their etymologies, the physical resemblance of the modern pen to a pin is of no small significance. Pin can be associated to penis on more than physical grounds--modern slang suggests rather stark interrelations between the two: penis is known in less technical circles as a prick or dick (> stick = s + dick), and a vulgar expression (usually used only by males) meaning 'to have intercourse' is to stick it to someone (which has another sense, discussed in section 4). Pine can be included in this set on two grounds: 1) the general shape of the tree, in that a pine is distinguished from all other trees by the fact that its trunk generally does not split (i.e. "branch") and the tree comes to a point at the top, and 2) what would ordinarily be called leaves on deciduous trees are called needles on the genus of pine. The pennant is distinguished from other flags by the fact that it is more narrow and generally much longer; in general the pennant in the United States has only one point, but it may have two or more. The most common shape for the chesspiece called pawn is phallic, and the same can be said for the punt and the punch.

Set G comprises an incomplete set of terms that are strongly associated with members of Set F (they are generally used to designate the sharp end of those items): pin point, pencil point etc. Penthouse is a very interesting example where the association of /p_n/ in the set may be responsible for a gross change in meaning, but such a claim would have to be subjected to more rigorous investigation. Penthouse originally meant barn-like building appended to a house as a kind of lean-to; the etymon

for the first syllable is quite clearly Greek penta- ('five') to indicate that the combination roof-wall of the penthouse was the fifth wall. In American English, however, a penthouse is to be found only at the top of a tall building, the phallic identification of which is quite clear. Both the Oxford English Dictionary and medical dictionaries concur in differentiating a pimple or boil from a carbuncle (< earlier forms, both French and Latin, meaning 'glowing coal') through the fact that the pimple has a raised, obvious center.

The verbs in set H appear to be largely restricted to collocation with agents, instruments or goals that have shaft-like characteristics (e.g. to pound a nail, where the focused action of pounding is more restricted than mashing or hitting).

3.3. It must be understood that neither of the sets in section 3.1 or 3.2 are constructed by whim; the associations among the items in each table are below the level of consciousness for at least monolingual or native English speakers. A classic example of such an association being raised to the level of consciousness is Pike's report that his 'conception' of the word manifold ([mænɪfɒld]) as in the phrase manifold blessings was forever altered once he heard it pronounced [mæni fɒld] in a Church of England service (Pike 1967: 173).

The tables cannot be said to be assembled through some sort of "free association". Freud (1960, 1965) suggests that there really is no such thing as truly "free" association. Two words or phrases or things are not associated without some kind of motivation; the phrase "free association" is a contradiction of terms. The items in Tables 1 and 2 are collected according to two indispensable criteria: phonetic similarity and semantic similarity, which cannot be employed independent of one another for this kind of analysis. These criteria are reminiscent of the form-meaning complex so critical to tagmemic theory (cf. Pike 1967), although the complex is clearly below the traditional morphological level. In tagmemic terminology, it would perhaps be correct to say that each root- or base-morpheme in Table 1 and Table 2 is morphetically complex. Moreover, the morphetic element /p_n/ in Table 1 is common to all the members of that table, but perhaps emically different from the morphetic element /p_n/ common to all the morphetically complex morphemes of Table 2 (cf. Pike 1967: 167). Thus, not every word or item containing /p_n/ must belong to one of the sets in Table 1 or Table 2, but strong cases can be made for terms not discussed in the context of each set. The relation of pendulum, pendant, or even spin, to pain is perhaps a distant one, but it is a natural one as long as a sense of "balance" is present in the analysis. Clearly, "balance" may not be the central or principal semantic element for all the items in Table 1, yet "balance" is a semantic feature common to all of them (cf. Pike 1955).

It is very tempting to reconsider the English semi-jocose forms discussed by Malkiel (1977) and Cooper and Ross (1975) in the light of the discussion of the /p_n/ complexes. Each /p_n/ complex seems to have considerable membership, but the same can-

not be said of non-onomatopoeic terms like riff-raff, namby-pamby, wishy-washy etc. Because each pair is marked by a constancy of at least two segments, it is possible that the reduplication with vowel or consonant apophony creates sets of association homologous to the /p_n/ complexes. Unlike the /p_n/ complexes, these sets comprise only two (or sometimes three or four) members which are sufficient to establish an associative set. Similarly, the dalang in the wayang kulit could be making use of such an associative principle, although he could also be interrelating separate classes even more distinct than the two /p_n/ classes discussed in section 3.1 and 3.2. It would also appear that Tooke (cf. Culler 1976: 56) is availing himself of this principle as well, although the unit that he has chosen (bar) is somewhat larger than the /p_n/ complexes.

4.0. It is reasonable and natural that a language have some degree of homonymity or some other similar homomorphous elements (as in the case of the two /p_n/ complexes in sections 3.1 and 3.2), and it is likewise reasonable and natural that such coincidence of form should be the subject of discussion or exploitation by the speakers of that language--such is part of the nature of puns and other playful or artistic uses of language such as poetry.⁷ It is therefore to be expected that the homomorphous nature of the /p_n/ complexes should merit the attention of native speakers of American English through metaphor and an adjunct, indirect predication or collocation involving highlighted semantic features of the morphetic or morphemic unit. For example, the relation of to cash a ten dollar bill, with the morphetically complex morpheme cash from the -ash set, to to break a ten dollar bill, perhaps highlights a sense of 'violent motion' inherent to -ash. It is often difficult to decide if in such phrases as to break a ten dollar bill the focus is metaphoric or some kind of indirect comment.

4.1. Each of the items in Table 1 and Table 2 can be said to be appropriate to a specific universe of discourse (cf. Pike 1964, 1967). In a somewhat rigid generalization, pain is appropriate to a somatic universe of discourse different from (but relatable to) the social universe of discourse of punish. However, certain expressive conventions allow the 'inappropriate' or 'wrong' use of punish for pain or pain for punish (cf. Percy 1958). Thus, when a judge passes a death sentence on a convict, he may use the expression pain of death. While this historically may be consonant with the original meaning of pain (cf. Benveniste 1948, Fabrega and Tyma 1976a), it is nonetheless in some way 'wrong' from a synchronic standpoint.⁸ Not all metaphor involves a form-meaning complex like /p_n/, but quite obviously some metaphor is motivated through such complexes. Such an 'inappropriate' association is present in the expressions pint of blood or pound of flesh, which are generally used in a context of reprisal. In and of themselves, pint and pound denote little of reprisal, yet when they are unified with a field of 'balance', they become metaphorically acceptable.

4.2. It is also apparent that the two /p_n/ complexes are relat-

able in somewhat more indirect fashion. The relevance of pawn to both /p_n/ classes suggests a kind of bridge between them. Pawn then stands as a kind of portmanteau between the two tables. Similar bridges are also possible for pennant, which has assumed the sense of 'prize' or 'championship' in American baseball. It is possible that when pennant suggests a sense of 'championship', it belongs in set B as it is a prize, a compensation for talent and hard work. In such a context, the shape of the pennant is irrelevant or very nearly so. For the child who wishes to have a souvenir of a trip to a ball park, the shape of the pennants sold by ball park vendors is central, and association to 'championship' may be distant or even absent altogether. The verb to punch is frequently used in discussion of reprisal as well: one who is offended by another may wish to punch the offender. It is tempting to speculate that punch would then be associated with punish, as in That guy made me so mad that I wanted to punch him. There is another, more direct, association between the two complexes, similar to the case of punch. The vulgar phrase meaning 'to have sexual intercourse', to stick it to someone, also can function as an expression of punishment (e.g. Get stuck, I've been stuck with so-and-so). In vulgar speech, several stock epithets or curses suggestive of extreme anger involve reference to sexual intercourse (e.g. Get fucked, Fuck you); one who feels he has been punished wrongfully or to an unwarranted degree may likewise use terminology suggestive of the sexual act (e.g. I've been fucked). In some segments of Anglo-American culture, the association of the sexual act (and its likely result) with punishment is indeed a strong one. In addition, jabbing, poking and sticking are descriptive metaphors that can be used in the description of pain (e.g. pricking pain, stabbing pain, etc.) in English (Fabrega and Tyma 1976a; 1976b). These descriptive dimensions seem to be relatively unimportant in the perceptual domain of pain in some other cultures (Fabrega and Tyma 1976b).

5.0. It would seem that the enterprise of association undertaken in sections 3.1 and 3.2 (Table 1 and Table 2) is not too far removed from the philosophic etymology of Tooke so disparaged by the Neogrammarians. The mode of association used here differs significantly from that of Tooke in two very important ways: 1) it exploits an apparently iconic form-meaning complex whose semantic identity is, in a manner of speaking, farther "below" the level of consciousness than that suggested by Tooke and 2) the form-meaning complexes suggested here do not seem to have the degree of autonomy afforded the bar unit suggested by Tooke. This second difference also sets form-meaning complexes of the /p_n/ type apart from "higher" order units in that /p_n/ units are always bound forms, as opposed to the "free" character of a morpheme such as beat⁹, which may be joined with affixes to yield complex forms (e.g. beaten). While the associations used here may be historically spurious, they are nonetheless valid insofar as they afford a manner of coherence within the language (e.g. penthouse, which "originally" had a sense of 'five'). It may even be possible that some formal changes within languages

are activated by associating or fitting new forms or reworked forms into previously established associative paradigms.

Just as the associations in 3.1 and 3.2 may resemble Tooke's undertaking, so too does the discussion of metaphor and indirect adjunct predication in 4.1 and 4.2 resemble to a degree the behavior of the dalang in the Javanese wayang kulit. Language can be turned in on itself in a universe of discourse for lexifying or for establishing coherence. Language must be used to say things about itself. The weight of the observations of Becker (1978), Malkiel (1977), and Cooper and Ross (1975) strongly suggests that in language, elements of the past are exploited and reshaped for the purposes of the present.

To whatever extent the present analysis may be anecdotal or transcendent (cf. Hjelmslev 1961: 10), such restricted focus is essential for the discovery of the fact that some patterned aspects of language reflect in a direct (but arbitrary) manner some patterned aspects of social behavior (cf. Sapir 1927, Hjelmslev 1961, Pike 1967, Lamb 1965). The pattern of language is observer-related: "The observer brings to bear on experience a unitizing ability" (Pike 1964: 130). The reality of language is not threatened by such an observer imposition; the observer is central to the reality of language when language is conceived of as a system of human interaction.

Notes

¹ I wish to apologize to Prof. Malkiel for my theft of his title (Malkiel 1977) and to apologize for damage I may have wrought to his ideas. I wish also to express my gratitude to Alton Becker and Deborah Tyma for their encouragement in this undertaking. To Deborah Tyma I must extend my gratitude for her boundless assistance and patience.

² Ralph Waldo Emerson, p. 18 in Nature (published in 1948 by the Liberal Arts Press, New York).

³ Ralph Waldo Emerson, p. 26 in The Heart of Emerson's Journals (edited by Bliss Percy, published in 1926 by Houghton-Mifflin, Boston and New York).

⁴ Brhaspati, quoted in K.G. Chatterji (1934: 21).

⁵ The Oxford English Dictionary glosses panic as 'groundless fear', which would suggest a sense of 'unwarranted fear'.

⁶ The substantive punch 'fruit drink' does not seem relevant here. There are interesting expressions involving this punch that do tempt its inclusion: To spike the punch 'to put alcohol in a fruit drink' and to have punch (said of alcoholic beverages that are strong).

⁷ Kenneth Pike (1971: 104) has written the following poem which exemplifies this point:

Hear!

"Hey! How can I hear?
You chopped my ear off!
Is it a cap to doff?"
"Sorry. Take it back. Here!"

⁸ In the model of Kurylowicz (1956), pain in pain of death has taken on a secondary function, while the former primary function of pain is assumed by punish and pain has a new primary function.

⁹ The example of beat here is illusory, since beat 'contains' a /b_t/ complex common to the (incomplete) set beat, bat, batter, butter and so on.

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ON THE NOTION OF LEXICAL FIELD

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1 Introduction

1.1 The problem

In his recent book on semantics, Lyons emphasizes both the proven value of the theory of lexical fields and "the fact that it has not been, and perhaps cannot be, formalized", a potentially "damaging criticism" (1977: I, 267f).

In the present paper I shall be concerned with the problem of how the key notion of field theory, the notion of lexical field itself, can be made formally explicit. I shall assume familiarity with the history of field theory and with its more recent developments. Both are readily accessible in introductory texts (Lehrer 1974, Lyons 1977: I, Chs 8f) and synoptic presentations (Geckeler 1971: Chs IIIf, VI; Coseriu & Geckeler 1974). A number of classical papers have been collected in Schmidt (ed) 1973, Trier 1973, and Tyler (ed) 1969.

I shall also assume familiarity with the development and present state of componential semantic analysis, referring the reader to the same sources as before (esp. Tyler (ed) 1969; Geckeler 1971: Ch. V; Lehrer 1974: Chs III, VIII; Lyons 1977: I, 9.9; cf. also Nida 1975).

Lyons correctly points out that "componential analysis can be seen as an extension of field theory" (1977: I, 326) but goes on to claim that neither presupposes the other. This is a debatable claim. It has been observed by a number of authors that componential analyses must be relativized to lexical fields, a position I would myself adopt. It also seems to be a generally shared conviction in recent work that lexical fields can be established only by factorizing word meanings into semantic components. I shall argue that this is indeed incorrect; more strongly: the 'features' used in establishing lexical fields must not be identified with components of word meanings.

For orientation, I shall briefly discuss one of the few informal definitions of lexical field that have been attempted in linguistics, and consider a simple example taken from the literature.

1.2 A definition and an example

In 1967: 294, Coseriu proposes the following definition of "Wortfeld" (freely translated):

- (1) From a structural point of view, a lexical field (Wortfeld) is a lexical paradigm constituted by different words of a

language that are directly opposed to one another by simple content-distinguishing features and that jointly subdivide a lexical continuum of content.

(Similarly, Coseriu 1975: 31, quoted from a 1968 paper.) Essentially the following entities are assumed in this definition:

- (2) a. a language;
- b. different words of the language;
- c. a lexical continuum of content;
- d. simple content-distinguishing features.

In addition, there are the following relationships:

- (3) a. direct oppositions between the words, based on the content-distinguishing features;
- b. a subdivision of the content continuum effected by the words.

Obviously, (1) implies the view that lexical field theory should be extended to include componential analysis.

The essential points of (1) are illustrated by the following down-to-earth example adapted from another author (Lehrer 1974: 65):

(4) <u>cake</u>	<u>cookie</u>	<u>biscuit</u>	<u>cracker</u>	<u>roll</u>
+ sweet	+ sweet	- sweet	- sweet	+ sweet
+ raised	- raised	+ raised	- raised	+ raised
- yeast		- yeast		+ yeast
+ soft	- soft ¹	+ soft	- soft ²	+ soft ³
+ indi- vidual	+ indi- vidual	+ indi- vidual	+ indi- vidual	+ indi- vidual
<u>bun</u>	<u>bread</u>	<u>(added l.c.):</u>		
+ sweet	- sweet	¹ (sometimes + soft)		
+ raised	+ raised	² (+ crispy)		
+ yeast	+ yeast	³ (soft or hard)		
+ soft	- soft			
+ indi- vidual	- indi- vidual			

This analysis is to capture American usage for a certain set of words referring to 'bakery products' (l.c.; the set is incomplete). The essential points of (1), as listed in (2) and (3), are exemplified as follows:

- (5) a. 'language': American English;
- b. words: cake, cookie, etc.;
- c. content continuum: 'bakery products';
- d. features: + sweet etc.;
- e. oppositions: as specified by the columns in (4);
- f. subdivision: division of 'bakery products' according to applicability of words.

In formulating (5) we had to use 'shudder quotes' for several terms, and should have used them more often. We shall take definition (1) and example (4) as a starting-point for our own explication (both (1) and (4) are typical of current notions of lexical field). Let me emphasize, though, that our own conception is not based on just (1) and (4), which were chosen mainly for purposes of illustration. Part of our task will consist in clarifying the auxiliary concepts that are involved in lexical field conceptions. We shall take up the subpoints of (2) in Sec. 2 and of (3) in Sec. 3. Their discussion will result in a number of requirements that a more precise concept of lexical field should satisfy. Such a concept will then be defined (Sec.4) and an even simpler concept will be suggested. Either concept should cover all types of lexical fields that have been considered in the literature.

2 Requirements and auxiliary concepts (1)

2.1 Requirements 1 to 3: idiolect systems and words

By (2a) and (2b), a lexical field is relativized to a 'language'. Example (4) was taken from a chart that confronts 'American usage' with 'Scottish usage': investigations of lexical fields are notoriously sensitive to dialect differences. It is Coseriu who has been most consistent in trying to account for language variability in connection with lexical fields (e.g. Coseriu 1973: III). I shall take his approach to its logical end by requiring that

- (6) Requirement 1. Lexical fields should be relativized to 'idiolect systems'.

Thus, "language" in (2a) should be replaced by "idiolect system". Naturally, the term "idiolect system" has to be explicated in a way that avoids the well-known objections against assuming such entities (cf. below, Sec. 4.1, (i)).

By (2b), a lexical field involves different 'words' of a 'language', or an idiolect system if (6) is adopted. How, then, are we to understand the term "word"?

In the literature on lexical fields, surprisingly little thought has been given to this question. It is a well-known fact that terms like "word" are ambiguous in several dimensions. At least the following ones must here be considered:

- (7) a. words as excluding meanings vs. including meanings;
b. words as units vs. non-units;
c. words as syntactic vs. morphological entities.

Much of the literature on lexical fields is fundamentally unclear as to (7a). Thus it is difficult to establish what is to count as different words: two form-meaning pairs, which may differ with respect to form, meaning, or both, or just two formal entities? It is easy to see that the second alternative is inadequate. Any conception of a lexical field involves a requirement such as (3b), subdivision of a 'lexical continuum of con-

tent'. If all meanings of a word (understood as a purely formal entity) have to be considered in setting up a lexical field, there may be no 'continuum of content'.

As to (7b), it is fairly clear from most authors that they do not conceive of lexical fields as consisting of individual word forms. (The issue is confused by Coseriu's use of "paradigm" in (1): he uses "paradigm" in the structuralist's sense - not in the sense of traditional grammar - to refer to a set of 'interchangeable' entities; according to the structuralist, this would be a set of individual 'forms'. Lutzeier forthc. suggests a notion of lexical field by which a field would indeed be a paradigm as understood by the structuralist. This deviation from traditional field concepts would have disastrous consequences for the traditional aims of field analysis.) It remains universally unclear what kind of entities 'words' are to be if forms are ruled out. (Both Coseriu and Lyons (1977) speak of 'lexemes', in somewhat different senses. Coseriu's use remains obscure; Lyons (1971: I, 1.5) refers to Matthews 1972, 1974, where the term again is not sufficiently clarified.)

I propose that the form part of a word (which has a formal part and a meaning part) be conceived not as an individual form but as a paradigm of forms. This may be either a word paradigm in roughly the traditional (non-structuralist) sense, or a stem paradigm. (Cf. below, Sec. 4.1, (ii).)

Any choice between the two possibilities would imply a decision with respect to (7c): a word paradigm is a paradigm of syntactic units, a stem paradigm of morphological ones. The term of lexical field (Wortfeld) seems to suggest word paradigms; it may be anything but clear, though, whether a given author favors a 'morphological' or a 'syntactic' conception of words. Particularly perplexing in this respect is the term "lexeme" as used by Coseriu and Lyons (see above). I shall here assume the syntactic conception, choosing word paradigms over stem paradigms; however, the latter remain a serious possibility for identifying the 'words' of a lexical field. The form part of a word, then, is to be a word paradigm, understood as a paradigm of syntactic units. Generally:

- (8) Requirement 2. The 'words' that belong to a lexical field of an idiolect system should be taken as words of the system in the following sense: each word is an ordered pair consisting of a word paradigm (understood as a paradigm of syntactic units) and a meaning that the paradigm has in the idiolect system.

Requirement 2 is not sufficient to characterize the words of a lexical field. It is usually assumed (though not in Lehrer 1974) that the words of a given field should all belong to the same 'word class', in particular, should be homogeneous with respect to parts-of-speech distinctions. (This is also implied by Coseriu's stipulation in (1) that a lexical field be a 'lexical paradigm'.) Moreover, the words should be 'elementary', which may be understood either morphologically as excluding compounds, or

semantically as excluding 'composite meanings' (cf. Coseriu's requirement of 'primary' words, 1973: 53), or both morphologically and semantically. The requirement of 'elementary' words seems too strong to me; semantically, it may artificially introduce gaps into an otherwise more complete lexical field. I shall keep sameness of 'word class', though, in agreement with most authors.

- (9) Requirement 3. The 'words' that belong to a lexical field all belong to the same 'word class'; in particular, they belong to the same 'part of speech'.

What exactly should count as a word class in (9) is a rather difficult question; I shall eventually propose a semantic answer (cf. Sec. 4.2, following (21)).

2.2 Requirements 4 and 5: domains and features

Lexical fields are usually named by expressions that characterize the objects to which the words in the field apply: "the field of colour words", "of kinship terms", "of bakery terminology", "of verbs of motion", etc. Expressions of this kind indicate a 'domain' for the denotations of all words in the field. Coseriu's 'continuum of content' (2c) may be taken as analogous to, if not identical with, a field's domain. Some of the knottiest problems of field theory are connected with the question as to how the domain of a field is delimited. I shall here take the view that the domain of a field is given independently of the words in the field; in particular, there may be no single word in the idiolect system to denote the domain. (This is compatible with Coseriu's view of the 'archilexeme', which specifies the 'continuum of content' and may not be a word in the language - if it is a linguistic entity at all, a point on which Coseriu is ambiguous.)

- (10) Requirement 4. There is a domain for the denotations of the words of a lexical field, given independently of the words, such that the denotation of each word is within the domain.

Finally, consider the 'simple content distinguishing features' (2d). For a clearer picture I shall again use example (4), which provides 'semantic feature expressions' such as "+sweet" or "-yeast". (Expressions with a + sign will not be taken as names of features; for their interpretation cf. the remarks below, following (16).)

The literature is usually unclear about the interpretation of 'semantic feature expressions' in word semantics. Should an expression of the form αF (where α is either "+" or "-", and F usually is some noun or adjective taken from a natural language) be interpreted as, (i) the name of a property of objects that are in the denotation of the words whose meanings are being studied; or (ii) the name of the set of objects that have a given property; or (iii) the name of a concept that is a 'component' of word meanings; or (iv) the name of a semantic property of a word? (See also Lyons 1977: I, 9.9, for discussion.)

Thanks to the down-to-earth nature of example (4), the answer is obvious in this case: expressions such as "+sweet" or "-yeast" should be taken as names of properties of objects to which words like cake may apply (possibility (i)), i. e. as names of properties of bakery products. Indeed, it may be argued that interpretation (i) is generally more adequate than the rest. Accordingly, I introduce the following requirement:

- (11) Requirement 5. There is a set of properties ('features') associated with each lexical field such that each of the properties may be assigned to objects in the denotations of words in the field (hence, to objects in the field's domain).

In this formulation, "property of" should be supplemented by "or relation among", cf. (20), below.

We now turn to requirements connected with (3), the oppositions between words and the subdivision of a field's domain.

3 Requirements and auxiliary concepts (2)

3.1 Features and classification systems

According to (3a), the features provide the basis for 'direct oppositions' between the words in the field. I shall suggest an explication of this idea that deviates from Coseriu's own understanding of "opposition", which is modelled upon phonology. My explication will be introduced via a closer analysis of example (4).

This example partly specifies a lexical field whose domain may be identified with the set of bakery products, to be abbreviated by "B". The features in (4) have been construed as properties. Let us assume that it has been decided to what kind of entities these properties may be attributed. The set of these entities may or may not be identical with the set of bakery products.

Assume an arbitrary property α and an arbitrary set M. By the range of the property α in the set M - $r(\alpha/M)$, for short - we understand the set of entities that have the property and belong to the set.

For each of the features in (4) we consider its range in the set of bakery products. Thus, the range of +sweet in the set of bakery products, $r(+sweet/B)$, is the set of bakery products that have the property +sweet (that are sweet); $r(-sweet/B)$ = the set of bakery products that are not sweet. In the case of +crispy (cf. (4), fn (2)), it is apparently assumed that only non-soft bakery goods may be either crispy or non-crispy; that is, both the ranges of +crispy in B and of -crispy in B are taken as properly contained in the range of -soft in B. Put differently, $r(+crispy/B) = r(+crispy(r(-soft/B)))$; analogously, for -crispy. The ranges of +yeast and -yeast are obviously contained in the range of +raised.

Apparently, the features in (4) jointly induce a system of classifications whose point of origin is B. This system contains the following six classifications:

- (12) a. Sweetness = $\{r(+\text{sweet}/B), r(-\text{sweet}/B)\}$.
 b. Raising = $\{r(+\text{raised}/B), r(-\text{raised}/B)\}$.
 c. Use of Yeast = $\{r(+\text{yeast}/B), r(-\text{yeast}/B)\}$.
 d. Softness = $\{r(+\text{soft}/B), r(-\text{soft}/B)\}$.
 e. Crispyness = $\{r(+\text{crispy}/B), r(-\text{crispy}/B)\}$.
 f. Individuality = $\{r(+\text{individual}/B), r(-\text{individual}/B)\}$.

Each classification (named by the expressions "Sweetness" etc.) has been construed as a set of two subsets of B. The term "classification" is understood as follows:

- (13) Let M_1 and M_2 be any sets. M_1 is a classification on M_2 if, and only if,
 a. M_1 has at least two elements;
 b. each element of M_1 is a set;
 c. no element of M_1 is a proper subset of any element of M_1 ;
 d. M_2 = the union of M_1 .

Informally, a classification is an exhaustive subdivision of a set into (possibly overlapping) subsets. If M_1 is a classification on M_2 , M_2 will be called the basis of M_1 .

The six classifications in (12) form a system of classifications, as shown in Figure 1 (opposite page). There is one point of origin of the system, viz. B. The classifications (12), except for (12c, e), are classifications on B, hence, cross-classifications on B. The basis of (12c) and (12e) is not B itself but $r(+\text{raised}/B)$ and $r(-\text{soft}/B)$, respectively. These are sets that have been obtained by classifications on B. (12c) and (12e) thus are subclassifications relative to B. Informally, a system of classifications may be defined as follows:

- (14) A classification system on M is a non-empty set of classifications such that each classification in the set is a classification either on M or on a subset of M that is an element of a classification in the set.

System (12) is 'induced' by the features assumed in (4): the sets obtained by the classifications are the ranges of the features (in B).

3.2 Requirements 6 and 7. Basic idea for defining "lexical field"

Matrix (4) may now be read informally as indicated by the following reading of the cracker column:

- (15) Given an appropriate meaning, cracker denotes the set of all bakery products that simultaneously belong to the following sets: Non-Sweet (the range of -sweet in B, cf. Figure 1), Non-Raised, Crispy, Individual.

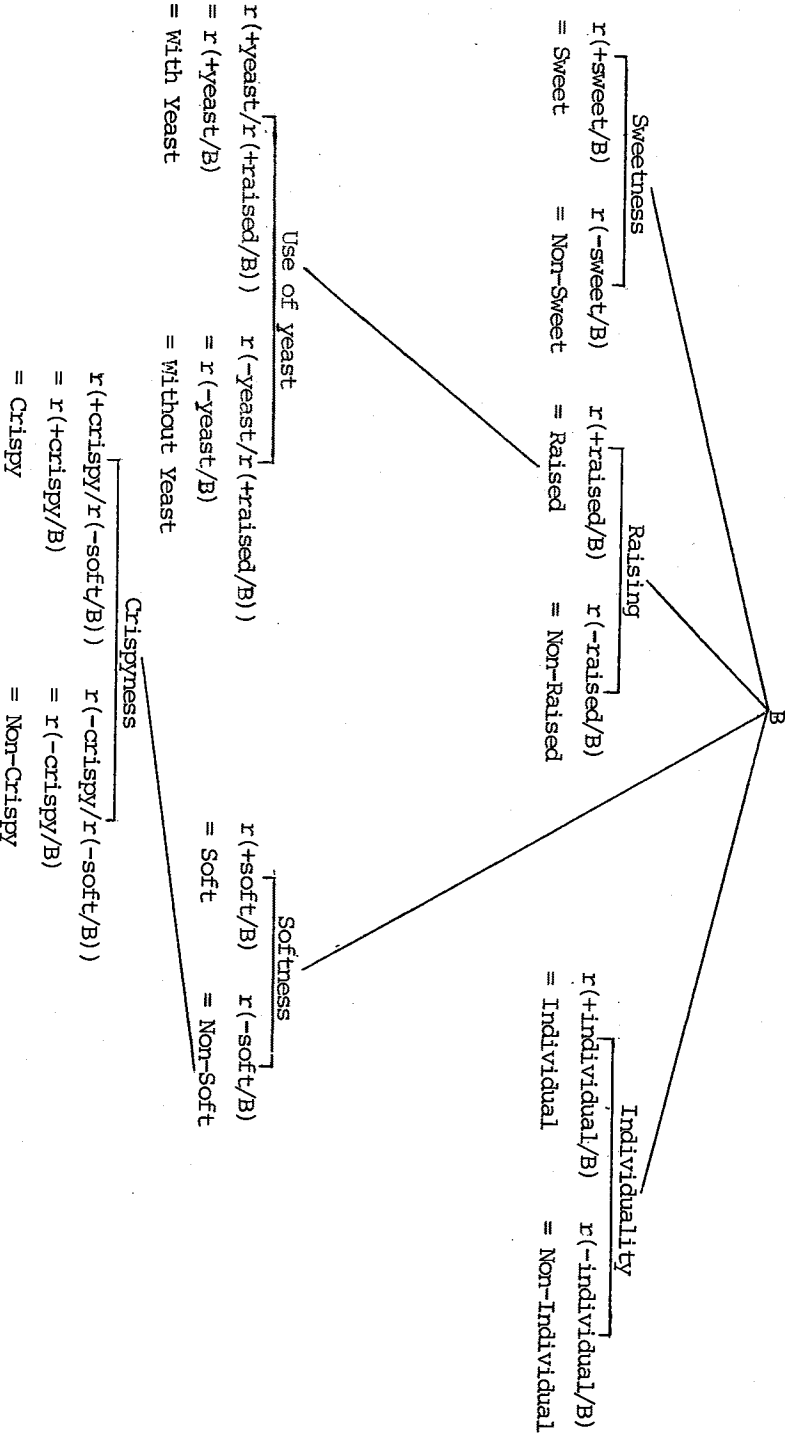


Figure 1

The five sets mentioned jointly form a maximal set of compatible end-points of classification system (12) in the following sense:

- (16) a. An element of an element of a classification system is called an end-point of the system if it is not the basis of any classification in the system.
- b. Two end-points of a classification system are called compatible if there is no classification in the system to which both belong.

Intuitively, we obtain a maximal set of compatible end-points of (12) if we follow down each path in Figure 1 exactly once.

In an analogous way, and correcting certain inconsistencies in (4), we associate a set of end-points with each column in (4), with one qualification: in the case of a "+"-entry, the corresponding classification is simply disregarded. Expressions like "+individual" are taken not as names of features but as indicating that a certain classification in (12), such as Individuality, is either irrelevant or inapplicable in determining the denotation of the corresponding word.

Comparing the columns in (4) we notice that for no two columns are the entries identical. Thus, the denotation of each word (relative to an appropriate meaning) is unambiguously determined by a set of compatible end-points of the classification system that is induced by all features associated with the field, and the denotation of the word is the intersection of this set of end-points. Generalizing, we arrive at the following requirement:

- (17) Requirement 6. For each lexical field there exists a classification system on the domain of the field such that:
 - a. The features associated with the field are the properties used in setting up the classification system: each set that belongs to one of the classifications is the range of the feature in the field's domain, and the range of each feature in the field's domain belongs to one of the classifications.
 - b. For each word in the field there is a specific set of features whose ranges in the field's domain form a set of compatible end-points of the classification system such that the intersection of this set of end-points is the denotation of the word.

Requirement 6 replaces Coseriu's condition of 'direct oppositions between words based on content-distinguishing features' (3a). His final condition - the words should jointly subdivide the continuum of content (3b) - may now be restated as

- (18) The union of the denotations of all words in a lexical field is identical with the field's domain.

This is quite a restrictive condition, which may eventually have to be modified. (There may well be 'bakery products' that are not in the denotation of any word of a given idiolect system.) For now, (18) will be adopted.

Our basic idea for defining the notion of lexical field may now be informally stated as follows:

- (19) A lexical field of an idiolect system consists of a set of words of the system, a domain for the denotations of the words, and a set of properties inducing a classification system on the domain such that Requirements 2 to 7 are met.

Obviously, (19) should be supplemented by a closure condition: the field should contain as many words as possible. Other modifications may be necessary.

In the next section, a definition based on (19) will be proposed and discussed. First, I shall indicate how some of the auxiliary notions connected with lexical fields may be understood within the framework of integrational linguistics.

4 "Lexical field" defined

4.1 Auxiliary concepts

The following concepts will be briefly commented upon:

- (i) idiolect system (relevant to Requirement 1); (ii) word paradigm and stem paradigm (Requirement 2); (iii) word meaning (Requirements 2 to 5); (iv) domain of a lexical field (Requirement 4).

(i) Idiolect systems. I shall assume the concept of idiolect put forward in Lieb 1970, and the concept of idiolect system characterized in Lieb 1977a. An idiolect is taken as an 'individual means of communication' that is a (homogeneous) part of a persons's entire share of a language and is determined by a 'system'. The varieties of a language, and languages themselves, are described in their systematic aspect by formulating universal statements that hold for all systems of idiolects in the given variety or language (Lieb 1977a: Part II).

(ii) Word paradigms and stem paradigms. The traditional concept of word paradigm is made precise in Lieb 1977a. A word paradigm is conceived as a set of ordered pairs (a binary relation) each consisting of a syntactic unit (a 'word form', possibly analytic) and a set of syntactic categories each of which is a set of syntactic units. For instance, the German verb paradigm laufen (run) would be a set containing pairs such as {laufe, {1 Person, Singular, Indicative, Present, Active}}. The notion of stem paradigm is explicated in Lieb forthc.a in an analogous way: each stem paradigm is a set of pairs consisting of a word stem (a morphological unit) and a set of morphological categories each of which is a set of stems.

Certain words in a traditional sense, such as conjunctions, do not seem to allow for word or stem paradigms. Traditionally, such 'words' have not been considered in connection with lexical fields but it may still be desirable to extend field analysis to cover them, too (cf. Weydt forthc.) If so, the concept of paradigm may be generalized by introducing 'improper' paradigms (cf. Lieb 1977a: 5.2), which allows for paradigms even in the

case of conjunctions.

(iii) Words and word meanings. In Lieb 1977b, forthc.b, word meanings are identified with concepts. The proposed conception should escape traditional criticisms of construing meanings in this way. A concept is taken as a property of individual conceptions or perceptions. With each conception and perception we associate a set of properties (or relations) as its content. For instance, the content of a specific perception 'of a house' might be a set of properties of physical objects such as having a roof, being at a certain distance, etc. A concept is the property of being a conception or perception in whose content specific properties (of, say, physical objects) appear. Thus, we might have a concept HOUSE that is the property of being a conception or perception in whose content the following properties of physical objects appear: having a roof, being constructed for [specific] uses, etc. The intension of a concept is the set of properties (or relations) that must be contained in the content of any relevant conception or perception. The extension of a concept is the set of entities that possess all properties (that are related by all relations) in the concept's intension.

The meanings of both word paradigms and stem paradigms are assumed as concepts in this sense.

A word is taken as a pair consisting of a paradigm of syntactic units (a word paradigm) and of a concept that is a meaning of the paradigm in the idiolect system. (To cover paradigms that would be without meanings on a traditional analysis, the empty concept - a concept lacking an intension - may be introduced as a possible meaning of paradigms.)

The denotation of a word may be identified with the extension of its meaning (of the concept that is the second component of the word). Thus, our previous use of "denotation" is covered.

(iv) The domain of a field. We shall assume that the domain of a lexical field is identical with the extension of some concept. This implies that the domain should not itself be taken as a component of a lexical field, as was suggested in (19), but rather the concept by which it is determined. We may well require that this should be a concept the speaker of the idiolect system 'has'; even then it may not be the meaning of any word in the idiolect system. All word meanings are concepts but there may be concepts of the speaker that are not word meanings in any of his idiolect systems.

A definition of "lexical field" based on (19) may now be formulated.

4.2 A definition of "lexical field"

We start by introducing a minimal amount of technical apparatus.

(20) Variables.

- a. "S" stands for any idiolect system.
- b. "P" stands for any syntactic paradigm (paradigm of syntactic units) of any S.

- c. " $\underline{b}$ ", " $\underline{b}_1$ " each stand for any property of conceptions or perceptions.
- d. " $\underline{F}$ ", " $\underline{F}_1$ " each stand for any set of pairs $\langle \underline{p}, \underline{b} \rangle$.
- e. " $\underline{e}$ " stands for any entity of a predetermined type; or stands for any n-tuple of entities of predetermined types for some fixed n.
- f. " $\underline{\alpha}$ " stands for any property of $\underline{e}$ s.
- g. " $\underline{A}$ ", " $\underline{A}_1$ " each stand for any set of $\underline{\alpha}$ s.
- h. " $\underline{k}$ " stands for any set of $\underline{e}$ s.
- i. " $\underline{K}$ " stands for any set of sets of $\underline{k}$ s.

In (e), n-tuples of entities are allowed in addition to 'simple' entities. In (f), "property" has been used in an extended sense: we also speak of properties of n-tuples, or n-place properties, for $n > 1$. (Such properties have been called 'relations-in-intension'.) The range of a one-place property was taken as a simple set; the range of an n-place property or relation-in-intension is an n-place relation-in-extension, i.e. a set of ordered n-tuples. Using "property" in this way, we will be able to take account of relational 'features'.

The variables " $\underline{\alpha}$ ", " $\underline{A}$ ", " $\underline{A}_1$ ", " $\underline{k}$ ", and " $\underline{K}$ " in (f) to (i) are only partly interpreted, due to the indeterminate status of the 'predetermined entities' (e). These are the entities in the domain of a field; they may of course be different for different fields. In the simplest case, they would be physical objects, events, or processes. " $\underline{K}$ " is to be used for any classification system based on the predetermined entities; this is a set of classifications; each classification is a set of sets $\underline{k}$ of predetermined entities. Hence, " $\underline{K}$ " stands for any set of sets of sets of such entities.

We further need the logical terminology introduced above (Sec. 3) in connection with classifications; the concept of range of a property generalized to n-place properties; and customary set-theoretical notions: is an element of (is in), is a subset of, is the intersection of. The non-logical terminology comprises "word", "concept", and "extension" and "intension" (of concepts).

(21) Definition 1. A LEXICAL FIELD is a triple $\langle \underline{F}, \underline{b}, \underline{A} \rangle$ such that:

- a. $\underline{b}$ is a concept.
- b. $\underline{F}$ is a non-empty subset of a part of speech of $\underline{S}$.
- c. There is no $\underline{\alpha}$ in the intension of $\underline{b}$ such that $\underline{\alpha}$ is logically equivalent to the property of being an $\underline{e}$ such that, for some $\langle \underline{p}, \underline{b}_1 \rangle$ in $\underline{F}$, $\underline{e}$ is in the extension of $\underline{b}_1$.
- d. There is a $\underline{K}$ such that:
 - α . $\underline{K}$ is a classification system on the extension of $\underline{b}$.
 - β . For every set $\underline{k}$ that is an element of a classification in $\underline{K}$, there is an $\underline{\alpha}$ in $\underline{A}$ such that $\underline{k} =$ the range of $\underline{\alpha}$ in the extension of $\underline{b}$.
 - γ . For every $\underline{\alpha}$ in $\underline{A}$ there is a set $\underline{k}$ that is an element of some classification in $\underline{K}$ such that $\underline{k} =$ the range of $\underline{\alpha}$ in the extension of $\underline{b}$.
 - δ . For every $\langle \underline{p}, \underline{b}_1 \rangle$ in $\underline{F}$ there is a subset $\underline{A}_1$ of $\underline{A}$ of the following kind. Let $\underline{q}(\underline{A}_1, \underline{b})$ be the set of all $\underline{k}$ such that for some $\underline{\alpha}$ in $\underline{A}_1$, $\underline{k} =$ the range of $\underline{\alpha}$ in the extension of $\underline{b}$. Then: (1) $\underline{q}(\underline{A}_1, \underline{b})$ is a set of compatible end-points of

- K. (ii) The extension of $\underline{b}_1$ = the intersection of $e(\underline{A}_1, \underline{b})$.
- e. For every $\underline{e}$ in the extension of $\underline{b}$ there is a $\langle \underline{p}, \underline{b}_1 \rangle$ in $\underline{F}$ such that $\underline{e}$ is in the extension of $\underline{b}_1$.
- f. There is no $\underline{F}_1$ satisfying (b) to (e) such that $\underline{F}$ is a proper subset of $\underline{F}_1$.

As defined in (21), lexical fields satisfy Requirements 1 to 7 as stated in (6), (8) to (11), (17) and (18). Lexical fields are relativized to idiolect systems (Requirement 1, cf. "S" in (21)). The words in the fields are words of the idiolect system understood as pairs of a word paradigm and a meaning of the paradigm (Requirement 2, cf. (21b, c)). All words belong to the same word class (Requirement 3). First, they belong to a single part of speech (21b). Secondly, they belong to a word class that is partly determined semantically, as will be obvious immediately. By (21dii) we have it that the denotation of each word (the extension of its meaning) is contained in the extension of $\underline{b}$, i. e. in the field's domain, in agreement with Requirement 4. Thus, all words satisfy the semantic condition that their denotations are contained within the extension of a single concept. The domain of the field is given as the extension of $\underline{b}$, and $\underline{b}$ - the domain specification - is given independently of the words; by (21c), the intension of $\underline{b}$ cannot be determined on the basis of the extensions of the meanings of the words (assuming an appropriate reflexive relation of logical equivalence between properties). In this sense, the domain of the field is specified independently of the words, again in agreement with Requirement 4. Because of (21d α) and (21d γ), the set $\underline{A}$ of features is as required in (11) (Requirement 5), and Requirement 6 is also met: (17a) is satisfied because of (21d α, β, γ), and (17b) because of (21d δ). Finally, it follows from (21dii) and (21f) that Requirement 7 has been satisfied.

4.3 Discussion. Simplifying the definition

The most essential point of the proposed conception of lexical fields may well be this: the set $\underline{A}$ of features has been required to induce a classification on the field's domain by which the denotation of each word is uniquely determined; it has not been required that the meaning of each word be the 'product', in some sense or other, of certain features from $\underline{A}$. Such a requirement would also imply that the denotations are determined whereas the converse is not true. We have opted for the weaker requirement because of notorious problems involved in the stronger one. The denotation of a word can always be identified with the intersection of a set of sets (cf. 21dii) but there may be no simple operation on the features that yields the meaning of the word. (The first point cannot be argued here; the second has been demonstrated convincingly by Lyons 1977: I, 322 sqq.) Componential analysis of meanings, which may be too restrictive for lexical field analysis, is also superfluous: this is an essential point of our reconstruction of the concept of lexical field.

It may therefore be suggested to omit the set $\underline{A}$ of features altogether and replace (21) by a much simpler definition:

- (22) Definition 2. A LEXICAL FIELD in $\underline{S}$ is a pair $\langle \underline{F}, \underline{b} \rangle$ such that:
a. to c.: (21a) to (21c).

d. There is a $\underline{K}$ such that:

$\alpha.$: (21d α).

$\beta.$ For every $\langle p, b_1 \rangle$ in F , there is a set of compatible end-points of $\underline{K}$ such that the intersection of the set = the extension of b_1 .

e. and f. = (21e) and (21f).

Although more careful discussion would be required, I do not see any reason against adopting (22) instead of (21), thus opting for a much simpler concept.

Either concept covers all major types of lexical fields that so far have been considered in the literature. In particular, the seemingly different cases of colour words and kinship terminology can both be subsumed. Subsumption under a single concept was declared impossible by Kutschera in the only previous attempt at formally reconstructing the notion of lexical field that may be considered successful (Kutschera 1971, 1975: 2.4.7; Sladek 1975/76 is formally muddled). Kutschera's concept only applies to fields such as colour terminology. It would be possible to show that a lexical field in the sense of Kutschera can be construed as a special case of fields in the sense of (21) or (22). I have obtained this result from a re-analysis of the material provided in one of the classical papers (Goodenough 1965). The objections raised by Lyons (1977: I, 319-21) against componential semantic analyses of kinship terminology are valid. However, the classical analyses in this area may now be understood as lexical field analyses which do not require meaning composition, and thus be salvaged.

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LEXICAL POLYGENESIS: WORDS AS
RESULTANTS OF MULTIPLE LINGUISTIC
PRESSURES

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Linguists in general and etymologists in particular usually assume that vocabulary items in any given language are monogenetic and can be derived from single ancestral items. The only two types of exception to this derivational rule that they commonly recognize are blends, such as brunch (<breakfast x lunch), and fused compounds, such as lord (<Old English hlæf-weard, "loaf-ward" or "guardian of property"). Other putative examples of lexical polygenesis are likely to be viewed by lexical monogeneticists as signs either of indecisiveness on the part of the etymologists involved or of etymological ignorance, both of which scholarly liabilities should be remedied by more assiduous investigation.

My own etymological experience, however, leads me increasingly to the opposite conclusion. The harder I try to "nail down" the origin of most words and word-like forms, the more indeterminate that origin becomes in terms of clear-cut single sources. This experience inclines me to regard many lexifications as linguistic analogs of dreams.¹ Those investigators who have done most to elucidate the structure of dreams are, of course, psychoanalysts. And the term which many of them employ to describe the process by which the crucial elements of a dream are generated is "overdetermination".² Overdetermination means multiple causation or motivation. A representative example of such overdetermination would be provided by a frustrated writer who dreamed repeatedly and obsessively of pencils. Here, in terms of typically Freudian interpretation, the manifest and iconic meaning of the pencils would be professional but its latent and symbolic meaning, phallic.³

Another way to phrase the role of overdetermination in generating and perpetuating lexemes is to assert (in unabashedly introspectionist terms) that most of our overt language behavior is accompanied by a flurry of covert word-association activity. To be sure, on the few occasions when such word-association becomes overt, in the form of nonce-words or slips of the tongue or ear, it is normally abortive in the sense that it has no perceptibly lasting effect on our speech or writing. Yet the process is so constant and so prolific that, given enough people and enough time, it eventually reshapes our lexicon.

To take a polygenetic view of word origins inevitably involves making at least two other basic but controversial

assumptions about etymology. The first of these is that lexical ancestry is relative rather than absolute in nature. This means not only that etymologists should distinguish between what might be called the "lineal" and the "collateral" ancestors of any given lexeme but that lineality itself is a gradient rather than a discrete aspect of lexical ancestry. The second is that, because of this derivational relativity, there is a gradual "fade-out" in the etymological antecedence of any lexeme and that this fade-out effect, in turn, leads inescapably to subjectivity in the assessment of degrees of lexical ancestry. While this subjectivity can be mitigated by active etymological collaboration, it cannot be eliminated by this means but only, at best, converted into "intersubjectivity"--that is, collective (as opposed to individual) subjectivity.

A good example of the etymological principles that I have been expounding is provided by the history of the verb slurp (1648),⁴ "to drink noisily or sloppily". Its dialectal variants are Scottish slorp (1802) and British slurp (1805); its colloquial variants (undated) are slurf and shlurf. For slurf, the likeliest lineal ascendant is Dutch slurpen, "to slurp". For slorp, it looks like Middle Dutch and Middle Low German slorpen, though the chronology here is inverted. The slang form slurf has the obstruent of German schlürfen, "to slurp". And, while slurp has no obvious precursor, its relation to slurf clearly parallels that of chirrup to chirp and suggests epenthesis, or secondary vowel insertion.⁵ The slang form shlurf, finally, has the dystactic base-onset of German-American names like Schultz and Yiddish-American nouns like shlump, "fool," and verbs like shlep, "to drag". (Yet the initial /s/ here may be overdetermined in the sense that it owes as much to an echoic attempt to mimic the sound of fluid turbulence as it owes to foreign linguistic influence).

Even if none of these foreign forms existed, however, one could easily explain both slurp and slorp as blends of slur with slop. In similar terms, slurp might represent a further modification of slurp in the direction of syrup (from Middle English) and 'shlurf' a different modification of slurp under the influence of shove (from Old English). Moreover, the words sip, sop, sup, and suck as well as slobber and sloven and even lip and lap all exhibit varying degrees of phonosemic relationship with slurp and its variants, such that any one of them could have contributed to its production, retention, or re-introduction.⁶

As we move from the history to the prehistory of the verb slurp, we find (despite the freedom granted the reconstructive linguist to straighten the twisted lines of lexical development) that its derivation becomes still more problematic. Greek rhophéō, "I gulp," and Latin sorb(e)o, "I suck," for example, suggest a Proto-Indo-European verb (hereafter PIE) *srob^h- or *s(o)rb^h-, from which we should inherit *strab, *sarb, *surve or

the like, rather than slurp. Part of the difficulty here, to be sure, may be within Germanic, since the Middle High German equivalent of German schlürfen was, surprisingly, sürpfeln. What this lexical reshaping suggests is the kind of transpositional alternation seen in English blab ~ babble.⁷ But there is further difficulty in the obstruent, which requires us to posit an additional, and possibly pre-Germanic, alternation between PIE *b and *b^h, of the kind that may recur in English slop ~ slob.⁸

Of the various lexical areas, the ones in which lexical polygenesis is most conspicuous are such relatively unstandardized domains as those of slang and proper names. The probable reason for the lack of standardization in these domains is that neither constitutes "public linguistic property" in the way in which common speech does. Slang tends to be restricted to certain social and occupational groups, while names are treated in a proprietary manner by the families or communities that bear them. The reasons for the polygenesis of unstandardized vocabulary, however, are less clear. One possibility is that lack of standardization permits greater polymorphy in such lexemes and that a cluster of allologs is more likely to have a cluster of parental antecedents than is a single unvarying lexeme. Another is that standardization constitutes, ipso facto, a kind of linguistic censorship which inhibits free verbal association and that removal of such censorship facilitates the "cross-fertilization" of lexemes which generates new vocabulary.

In any case, slang teems with words that seem to have several, if not many, lexical "parents" each. An example is American English bub, "fellow," which appears to have been in use, chiefly as a term of address, since the 19th century. In Britain, it was used in the 18th century to mean "dupe". When diminutivized as bubby, it meant merely "boy". In Old English, Bubba was a man's forename; it survives in British place-names such as Bubwith. Today, Bub remains (or has again become) a boy's name. In Black English, it usually takes the form Bubba--which, however, may be partly or wholly African.⁹ Both Yiddish and Pennsylvania "Dutch" influence, moreover, make the relation of German Bub(e), "boy," immediate and important.

Once we go beyond the syllable /bāb ~ bub/, potentially related forms appear so numerous that ordering them becomes arbitrary as well as difficult. Among the forms that seem to bear on bub are these: Bob (the nickname for Robert which may itself be lineally descended from the Old English forename Bobba); bob (18th century British slang for "fellow"); -bob, "object" (as in thingumbob); bod (contemporary British slang for "fellow," which may be either a stump-form of body or a derivative of the Old English forename Boda, a name that otherwise survives in the place-name Bodham); bud, "fellow," and buddy, "friend," which may stem from brud for brother; buster, "fellow," bubber, "topper," and buck, "male"; and bibbie, "baby," bab, "dad," and boob, "fool".

One slang word that has received intensive investigation during the past year is the 19th century Americanism shyster, "dishonest lawyer." Among the possible sources for it mentioned by Gerald Cohen, editor of Comments on Etymology, are these: Gaelic siostair, "barrator"; shicer, "mean person" (from German Scheisser "shitter"); shylock, "loan shark" (from Shylock, the villain of Shakespeare's Merchant of Venice) with the suffix of trickster or huckster; German Scheisskerl, "cruddy fellow"; German scheusslich, "abominable"; the German surname Scheuster (common in New York City); and the adjective shy in the sense of "underfunded" with (again) the suffix of gangster.¹⁰ Cohen's admirably exhaustive analysis of this word, with detailed citations, is still in process. My only reservation about his logogony is that he seems intent on demonstrating that all but one of these potential source forms constitute false etymological leads. Where he opts for an either/or approach to word-history, I prefer a both/and approach. Indeed, it is my contention that, in the absence of a plurality of overlapping or mutually reinforcing source-forms, most lexemes would not develop or, having developed, would not persist.

Of all forms of slang, the one which is supposedly least ambiguous etymologically is acronyms. And, of all the slang acronyms that came out of World War II, there are few as celebrated (or perhaps notorious) as the noun snafu/sna'fúw/, "mix-up" or "blunder". The mock-military phrase from which it was reputedly abridged is "situation normal: all fucked up". Even if we grant this folk etymology due courtesy and refrain from labeling it apocryphal, it is at best, in my view, a necessary but not a sufficient cause of the spoken compound phonemicized above. For there are a series of British, American, and Australian slang terms containing the phonemic sequences /sna/ and /fuw/ which exhibit what seem to me to be far more than coincidental semantic overlap with the word snafu. Among these are: snag, "hindrance," snap, "crazy," snapped, "drunk," snaffle, "unintelligible," snabble, "arrest," snavel, "steal," and snam, "copulate with"; and foo, "gremlin," foeey! (an exclamation of disgust), foofoo, "fool" and "sewage," foozle, "blunder" and "old fool," foofaraw, "disturbance," and foozlified, "drunk".

Among proper names, the most obviously polygenetic are undoubtedly nicknames. Even laymen seem well aware that Al, for example, is the common stump-form for Alan, Albert, and Alfred; and some may also use it for Alphonse or even Alice. But surnames are little less polygenetic, especially those that are derived from nicknames, such as the patronymic Harkins. Because of the parallelism of Harkins with Halkins and Hankins, displaying the same apophony as the hypocoristic triad Harry ~ Hal ~ Hank for "Henry," it seems likely that the stump-form of Harry is the primary source of Harkin, from which Harkins is derived by possessive suffixation. There are, however, about thirty other possible etyma for Har(kins), of which the most plausible are

these:

common nominal	derived surname or place-name
hare (a forename in Old Norse)	Harfoot
Old English here, "militia"	Harmon
hoar(y), "grizzled"	Harlock
hire(ling)	Harbottle
hart, "stag"	Harton
hawker, "falconer"	Harcourt ¹¹
hard(y) (a forename in Old English)	Harbridge
herd(er)	Harborough
Middle English hore, "dirt"	Harbourne
erne, "eagle"(obsolete)	Arden ¹²
Middle English erd, "dwelling"	Arden ¹³

Here, as elsewhere, my inclination is to believe that the onomastic base Har- is generated and/or sustained by the exuberant plethora of its possible sources.

Among place-names, one of the most polygenetic forms is the bound noun Hem-, as in Hemstead, Hemsworth, Hemsbury, etc. Older and fuller spellings, dating back, in some cases, to the 10th century, show that Hem- had at least nine different free nominal forms as etyma. These source-forms (quoted in their contemporary forms when such exist) are: hem (meaning "territorial border"), home (Scottish hame), hen, hemp, helm (meaning either "war-helmet" or "roofed hay-stack"), Old Frisian hemm, "combat arena", and Old English hymele, "hops," hēan, "on high," and hīgna, "monks". Over half of these common nouns were also used in pre-Norman times, sometimes with extensional suffixes, as personal names.

Of the various processes that contribute to the development of polygenetic lexemes, some are primarily phonic, such as sound-repetition. Even when we confine our consideration of sound-repetition to base syllables alone, it takes at least seven different forms. Six of these are exosyllabic, linking separate syllables together by phoneme-sharing; one of them is endosyllabic, linking portions of the same syllable together by phoneme-repetition. Examples of the first six, taken from compounds or phrases whose semantic reference is sonic, follow.

1. alliteration (onset-repetition): whoop and holler
2. assonance (nucleus-repetition): slam-bang
3. reliteration (coda-repetition): whipper-snapper
4. preliteration (alliteration plus assonance): clash, clang
5. circumsonance (alliteration plus reliteration): clickety-clack

6. rhyme (assonance plus reliteration): moan and groan
Endosyllabic sound-repetition, or palindromy, assimilates syllabic margins to one another, as in mom (~ma), peep (~peek), Nan (~Ann), and Bob (~Rob).

Strong evidence of lexification resulting from sound-repetition is provided by both exosyllabic and endosyllabic examples. Taking rhyme as archetypical of exosyllabic sound-repetition, we may cite the fact that, in the 13th century, only one English word--the verb daschen, "dash"--exhibited the base-terminating sequence /æʃ ~ aʃ/. Yet, by the end of the 15th century, there were, as an apparent result of its "jingling" influence, ten more such verbs: the disyllabic forms of mash, rash,¹⁴ lash, slash, flash, crash, abash, plash, gnash, and clash. Palindromization, moreover, seems to have been even more lexically productive than rhyme. In many cases, the lexical ancestry of words with palindromic bases is strikingly multiple. An onomastic example is the (formerly hypocoristic) surname Bibby, which may represent not only a "thinning" of the already palindromic names Bob and Bab(s) but also a palindromization of the names Billy and Libby. An ideophonic example¹⁵ is the word lollop, which, besides meaning "lazy fellow", can also mean "a heavy blow", "a mushy portion", and "clumsy leaping". In the second of these meanings, it was probably palindromized from wallop; in the third, from dollop; and, in the last, from gallop.¹⁶

Another word-generating process is elision, or "chopping," which is perhaps commonest in the semantic domain of hypocoristics. The nickname Bert, for example, can be derived either procopically from Albert or apocopically from Bertram.

At a certain point, it becomes a matter of almost arbitrary choice whether we call a process phonic or grammatical. Such is the case with the noun mush vis-à-vis its precursor mash. We can say either that the vowel of mash has undergone apophonic "blurring" (as with yuk, "chuckle," ~ yak, "chatter") or that the morpheme mash has undergone replacive infixation (as with 'drug', the substandard preterit of the verb drag).

The same interpretive choice holds with regard to the sonorant consonants whose optional presence or absence makes lexical doublets in the following cases.

inserted phoneme ¹⁷	pre-nuclear position	post-nuclear position
y	/m(y)uw/ moo, mew	/ti(y)t/ tit, teat
w	/t(w)itɪr/ titter, twitter	/bu(w)m/ boom
l	/b(l)iyp/ beep, bleep	/dow(l)t/ dote, dolt
r	/sk(r)imp/ skimp, scrimp	/pə(r)p/ pup, purp
m ¹⁸		/klaɪ(m)p/ clap, clamp
n		/krə(n)ʃ/ crush, crunch ¹⁹

ŋ

/kli(ŋ)k/
click, clink

When we move, however, from internal to external increments, a morphological formulation of the process involved becomes more persuasive than a phonological formulation. In the case, then, of the intensive s- in spudgy for pudgy, we shall speak of prefixation and, in the case of the ideophonic -um in stickum, "glue," of suffixation. This s- prefix is itself polygenetic, stemming from Anglo-Saxon "s movable" in words like (s)pike but from Latin ex- (via Old French es-) in words like (s)quash. Similarly, the -um suffix is probably mock-Latin in words like hokum (-hocus-) but clearly native in words like seld(om). Elsewhere, it is likely to be a hybrid of the two, reinforced by Pidgin English use of the reduced third-person objective pronouns 'im and 'em as verb inflections.

Yet another process that has clear lexical consequences is the conversion of spoken language into written language and the consequent feedback effect of writing on speech. In a number of cases, if a standard English word has a plurality of (cognate) dialectal antecedents, one of these will survive in the conventional spelling and another in the common pronunciation. Thus, although the sequence <-one>, as in bone, is normally pronounced /own/, in the word one it is usually pronounced /wən/; in gone, often pronounced /ɔhn/; and in shone, sometimes pronounced /an/. In words of foreign origin, such polymorphy more often represents a variety of different routes by which it reached English. Thus, the "single" word schism is shown by its three pronunciations /sizəm ~ sizəm ~ skizəm/ to have arrived by way of Old French (cf. scissors) but to have been influenced both by the German pronunciation of Greek-derived words (as in schist) and by the conventional Anglicization of words adopted directly from Greek (such as schizophrenia).

The morphological range of forms exhibiting polygenesis runs the gamut from affixes to phrases. One of the most polygenetic of English affixes is the fossilized but wide-spread prefix a-, /ə/. In adown, it stems from of; in afoot, from on; and in ado, from at. In other lexemes, it comes from Old English prefixes no longer current. Thus, in arise, it stems from ā-, "forth"; in aware, from ge-, "together"; and, in along, from and-, "opposite". And, in some cases, it comes, through French, from Latin. Examples are achieve (~chief), where it stems from ac- ~ ad-, "toward," and avert (~verse), where it stems from ā- ~ ab(s), "away".

Besides affixes, there are two other types of bound forms in English. One of these is phonosthemes--ideophonic phoneme-sequences which cannot readily be identified with the morphemes of microlanguage. Of the phonosthemes of English, there is

probably none more polygenetic than /æ^vs/, as in crash, connoting noisy and violent action. Among its early sources are these.

source language	source sequence	contemporary exemplar
Old English	æsk	rash
	āks	mash
Middle English	ast	gnash
	ais	abash
	ars	gash
	as	flash
	eš ^v	thrash
Old French	aš ^v	hash
Danish	ask	bash
Frisian	ats	clash
	atsk	(s)plash

The other type of bound form consists of once free nouns which have become fossilized after fusion into onomastic compounds. The English place-name Hem-, cited above for its plethora of etyma, is a dramatically polygenetic example.

At the structural level above that of the word, one can cite both compounds and phrases. The most polygenetic kind of compound is probably the rhyme-tagged type so polymorphically represented by hodge-podge = hotch-potch = hotch-pot. Here the hotch- comes, through French, from Dutch hotsen, "to shake" (related to English hustle). Structurally it is reminiscent of hotsy-totsy and semantically of the verb botch. The hodge- is probably influenced by Hodge, the obsolescent nickname for Roger, which connects it semantically with Roger-Dodger and structurally with Georgy-Porgy. And -podge, though presumably cenemic, further suggests podgy=pudgy, hence sludge, and so on as far as one cares to carry increasingly evanescent phonosemic associations.

An example of a polygenetic phrase is the idiom under way, meaning "having begun one's journey". This phrase is probably a blend of the two phrases on the way and under weight. To understand the second of the two phrases, however, we must almost certainly place it in a nautical context and explicate the weight as that of (raised) sail. In addition, there may well be phonosemic feed-in from the phrase weigh anchor, meaning "raise anchor (and so begin to move)".²⁰

The geolinguistic span of lexical polygenesis is likewise broad. It stretches from interdialectal to interlingual relationships and from the most current colloquialisms to prehistoric reconstructions. The pronunciation of egg as /eyg/, for example, probably represents a blend of Southern Middle English /ey/ with Northern Middle English /eg/, both meaning "egg". The English noun pistachio, while its ultimate source is Iranian, shows signs of having reached its present form by multilingual means. Though it is usual to cite Spanish pistacho alone as its immediate

source, our syllabification is clearly that of Greek pistákion, while our fricative (rather than occlusive or affricate) pronunciation of the dorsal obstruent is that of French pistache.

Of all reconstructed lexemes, there is probably none that has prompted more etymological speculation than PIE *ārio-, "noble" or "Aryan". Without listing historically attested forms, which are too multifarious to cite, we may note that there are at least three PIE *ar- roots from which this nominal has been derived by one Indo-Europeanist or another, the first meaning "good," the second "travel (on horseback)," and the third "acquire (wealth or power)".

It was Morris Swadesh's contention that prehistoric languages manifested as much consonantal as vocalic apophony²¹; and it is "Laryngealist" theory that PIE *a- reflects an initial pre-Indo-European dorsal fricative followed by *e.²² If both assumptions are justified, it follows that PIE *ārio- comes from a primordial root concerning which we can say little more than that its syllabic onset was a dorsal obstruent, its syllabic nucleus a short vowel, and its syllabic coda an apical sonorant. In that case, *ar-, "good," may be an allomorph of *an-, "spirit"; *ar-, "travel," may be an allomorph of *kel-, "drive"; and *ar-, "acquire," may be an allomorph of *g^her-, "grasp". In addition, there were other PIE roots which could, by this principle, be related to *ar-, even though none of them had the same phonemic form. One is *ker-, "hard," ~ *kel-, "strike," ~ *gal-, "power". Another is *kan- ~ gal- ~ g^her-, "vocalize (loudly)". And a third is *al- ~ *kan- ~ *g^her-, "(be highly) visible". By the principle of synesthesia that makes so many sensory terms, such as English clear, simultaneously visual and auditory in reference, it may well be that the last two lexemes were really only one, meaning "(extremely) perceptible". Either way, however, it looks as though PIE *ārio- was another of the "overdetermined" polygenetic forms that we have been discussing.

Thus far, all of our examples of lexical polygenesis have been drawn from Indo-European languages, and most of them from English. In principle, however, they can be drawn from any language or language-group. For instance, in Bini, a Congoid language of Nigeria, there is a large class of agential nouns formed from transitive verb phrases, such as bòwà, "house builder," from bɔ, "build," and òwá, "house". The vowel prefix ɔ- can be interpreted either as the bound form of the third person singular pronoun or as a verb-nominalizing morpheme.²³ In keeping with the thesis of this paper, I predictably prefer to regard it as both.

In recapitulating my thesis, I should like to make it clear that I am not arguing for a lexifying process whereby each lexeme has more ancestors than it has descendants. Were this so, vocabularies in general would have to be shrinking, whereas the

evidence is that they are at least maintaining their sizes if not (as I think more likely) increasing. In the hypocoristic domain, for example, nicknames like Fred, that have two or more etyma (e.g., Frederick and Alfred), are equaled if not overshadowed in number by names like Alexander, that have two or more derivatives (e.g., Alec and Sandy). What I am arguing for is a view of lexifications that pictures them not just as plants with single stems and many branches but, more realistically, as plants whose root systems rival, if they do not equal, their branch systems in complexity.

I should like, furthermore, to build on the Structuralist insistence that we view language as systemic rather than atomistic but, in doing so, to go beyond that insistence and invite a view of language which is polysystemic. In this view, phonology and grammar, microlanguage and allolanguage, intention and expression are in constant creative interaction, such that each domain continually stimulates the generation of new elements in the others. Only by such a visualization, I believe, can we develop a picture of language that even begins to represent its true richness.

Footnoted References

¹See Roger W. Wescott, "Language Dreaming," Interfaces: The Newsletter of Psychoanalysis and Linguistics, Washington, D. C., April, 1975.

²See Sigmund Freud, The Interpretation of Dreams (tr. A. A. Brill), George Allen and Co., London, England, 1913.

³Interestingly, etymology itself supports this interpretation, since Latin pēnicillum was a diminutive of pēnis.

⁴Parenthetical dates following cited lexemes indicate their earliest written attestations. Unless otherwise stated, such dates are drawn from the Oxford English Dictionary, 1947 or 1971.

⁵See Roger W. Wescott, "Allolinguistics: Exploring the Peripheries of Speech," in The Second LACUS Forum, Hornbeam Press, Columbia, South Carolina, 1975.

⁶See Roger W. Wescott, "Labio-Velarity and Derogation in English," American Speech, New York, N.Y., 1971.

⁷See Roger W. Wescott, "Neglected Affixes in English" (in preparation: portions available from the author).

⁸See Roger W. Wescott, "Consonantal Apophony in English," in Essays in Honor of Charles F. Hockett, Jupiter Press, Lake Bluff, Illinois (forthcoming).

⁹In his book Africanisms in the Gullah Dialect (University of Chicago Press, 1949), Lorenzo D. Turner cites the noun buba, which, in Bambara, means "termite" and, in Yoruba, "shirt". In both languages it is a man's name.

¹⁰These forms may be found in seven issues, dating from January 15, 1976, to April 1, 1978, inclusive, of Comments on Etymology (Humanities Department, University of Missouri, Rolla, Mo.), an important new periodical too little known among historical linguists.

¹¹Here we assume that the medial /k/ has been elided, as in made < make.

¹²Here we assume a morphemicization {Ar-den}, where -den(e) means "valley".

¹³Here we assume a morphemicization {Ard-en}, with -en from Old English ærn, "house".

¹⁴Though no longer a verb in British and American English, rash means "to dash or rush" in Scottish English.

¹⁵See Roger W. Wescott, "Ideophones in Bini and English," Forum Linguisticum, v. 2, n. 1, 1977.

¹⁶Historically, gallop is the Francian form of Norman wallop, as guile is of wile. In Old Frankish, it meant "to wall-leap". But, in English, the -(l)op has been drawn into the ambit of the augmentative suffix -up, as in the 17th century noun tittup, "huzzy" (~tit, "girl").

¹⁷Except as otherwise noted, all phonemicizations are those of George L. Trager, Language and Languages, Chandler Publishing Co., San Francisco, California, 1972, pp. 38-45.

¹⁸Post-consonantal pre-nuclear nasals are dystactic in all dialects of English except in parts of Scotland, where gnash has the same relation to gash that crackle has to cackle.

¹⁹Crunch can, of course, also be pronounced /krənc/.

²⁰Part of this etymology is drawn from Gerald Cohen, op. cit.

²¹Morris Swadesh, The Origin and Diversification of Language, Aldine, Chicago, 1971.

²²See J.A. Kerns, "The Laryngeal Hypothesis and Indo-Hittite, Indo-European Vocalism," The Journal of the American Oriental Society, v. 60, 1940.

²³Roger W. Wescott, A Bini Grammar: V. 3, Lexemics, The Michigan State University African Center and the United States Office of Education, East Lansing, Michigan, and Washington, D.C., 1963; p. 100.

ALLEGED IDIOMS WITH HIT

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This paper continues and exemplifies more fully a mode of semantic research developed in my four earlier LACUS papers. In "Primary Verbs" (1975) I argued that common verbs such as take, give, come, go, break, and hit are monosemic, and are judged as polysemic by dictionaries and linguists because their essential, general meanings are confused with contextual, inferential meanings. This confusion is fostered by the COMPOSITIONAL ASSUMPTION, a methodological maxim which dictates that the meaning of a construction should be the sum of its parts. In "Pragmatic Metonymy" (1976) I showed how this assumption is falsified by the widespread linguistic phenomenon of metonymy; and in "Idioms and Data" (1977) and "Two Forms of Reductionism" (1978) I argued that this assumption has led linguists such as Makkai (1972) and Bolinger (1976) to make incorrect claims that certain constructions are idiomatic. Those previous discussions were rather general, so in this paper I want to re-emphasize my points by concentrating in detail on the verb hit, taking as a starting point the claim by Boatner, Gates, and Makkai (1975) that phrases such as hit the road, hit the sack, and hit the books are idioms.

These phrases were discussed twelve years ago at the LSA by S. Robert Greenberg (1966) in an insightful paper which unfortunately has never been published. Greenberg accepted the judgment that these are idioms, and provided the usual justification for such judgments: (A) The hit in these phrases does not have the basic sense of 'strike' or 'collide with'. (B) A phrase such as hit the sack is ambiguous between a literal sense of physical contact and a metaphorical sense of 'go to bed with the intention of sleeping' or 'lie down to sleep'. (C) The Compositional Assumption is violated, because even if sack means 'bed' the phrase still does not carry the full sense, especially the purpose of sleeping. (D) These phrases are syntactically frozen: hit the sacks, hit a sack, the sack was hit, and the hitting of the sack have only a literal sense. However, having granted that these phrases are idioms, Greenberg felt that they also exhibit a degree of regularity. First, they follow a similar syntactic pattern. Second, and crucially, that pattern is productive; Greenberg noted that "if your family were at the beach, and your teen-aged son said, 'Let's hit the surf', you would know what he meant. Again, if someone were telling you about the fall into decadence of a friend, and said, 'Yes, first of all it was liquor, then pot, and then he began hitting the needle', you would know that he was referring to injecting a drug such as heroin into his veins. You would be able to interpret this idiom on the basis of

a very close analogy with hit the bottle, just as your interpretation of hit the surf would be aided by your previous knowledge of hit the road."

To capture this degree of regularity, Greenberg proposed that the hit-phrases be considered a FAMILY OF IDIOMS. He suggested that any short word such as hit, referring to a simple action or object, and easily used in metaphorical extensions, could be considered "idiom-prone", radiating extensions of meaning in the form of idioms. He sketched a possible development of sense in the following diagram, beginning with a basic agentive sense of 'strike', which diffuses into literal non-agentive and intransitive senses and also into idiomatic expressions which retain the agentive sense. Some of these idioms retain other basic senses of 'contact', 'vigor', and 'target', while others do not; some also acquire an additional pejorative sense.

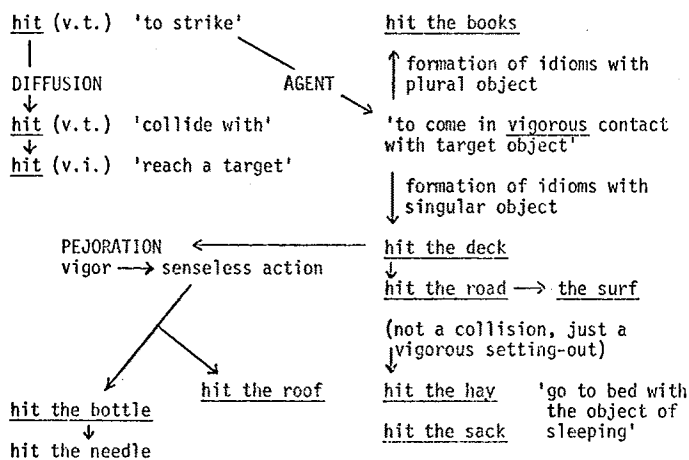


FIGURE 1

But while Greenberg was on the right track, I would like to go further. I will argue: (A) These constructions are not idioms. (B) The sense of 'strike' is not basic; that impression is a perceptual illusion. (C) The various apparent senses of hit are not EXTENSIONS of a basic sense, but manifest a complete GENERALIZATION of sense. (D) Variation in meaning is not created by DISCRETE SEMANTIC options, but is the result of contextual inference, which is a PRAGMATIC CONTINUUM. Thus, (E), hit has only one general meaning.

Greenberg had the crucial insight: productivity. But he seems to have considered this a sometime thing, while in fact, as I will show, it is pervasive. His failure to see this can be attributed to two factors. First, he considered only a few phrases, a meager set of data. In this, he typifies modern

semantic research, which seems content with the heuristic equivalent of the blind men inspecting the elephant. Second, he tacitly accepted the dominant mechanistic paradigm for linguistic analysis. This paradigm views language as a logical machine, independent of context, with sharply defined discrete meanings which accrue as unions of sets. The paradigm dictates some severe requirements for what is to be considered "regular" in a language. Only literal senses are allowed, only the most formal register (that is, the register in which meaning APPEARS to be exclusively linguistic), only the direct mode (that is, no hyperbole, no irony, no metonymy, nothing communicated by hint, omission, or implication), and only complete syntactic freedom (that is, no set phrases, no clichés, slogans, proverbs, etc.): in short, nothing "regular" except that which makes the Compositional Assumption true by fiat. In informal speech, this assumption is obviously inadequate, and linguists who champion it reveal that they are following this prescriptive paradigm rather than observing the language as it actually exists. As Greenberg notes, the hit-phrases are typical of informal speech; their alleged idiomatic features may simply be reflections of that status. We can explore this possibility if we now turn to a body of data large enough to reveal how hit is actually used.

The Compositional Assumption fails with many expressions because certain aspects of meaning, sometimes the most dominant, come not from the meanings of the linguistic elements themselves, but from what their meanings suggest. This is illustrated in examples (1-6) (see end of paper), which show hit with the related nouns road, highway and trail. Neither language nor the use of it exists in a vacuum; in all speech, but especially informally, speakers rely on what language suggests and assume that certain information has been conveyed even if it is not expressed. A stated cause can suggest an unstated effect (I struck the match), an intention its realization (I decided to go to the movies), an action its purpose (We went to bed), and, with hit the road, a means or a medium of an action can suggest the action; it is not accidental that a sense of movement derives from expressions with road, highway and trail. Only a strict doctrinaire would insist that to be regular an expression cannot exploit the everpresent extralinguistic background.

In fact, road suggests even more: it metonymically relates to notions of travel, whether as a necessity of work or duty or just aimless wandering or restlessness; it can also suggest a life of searching, or one more open to experience. The road of (2) in context refers metonymically to students looking for jobs, living in the outside world rather than going to college. The meaning potential of any linguistic expression is quite general; it is the context which defines more specifically. The medium is particular in (3), a type in (2), but nebulously in-between in (1). Trail varies between particular (6), in-between (4), and (figurative) type (5). The metonymic potential of a medium is quite obvious with the rails of (7), and perhaps the grit of (8). The article the defines a specific medium in (3); but when the

noun is a type, the designates the type. A appears here only with a particular (6). The type expressions, because they are types, tend to become syntactically frozen; but example (9) shows that the particulars are potentially very productive.

With the possible exception of (6), hit does not suggest the alleged basic sense of physical contact; rather, the sense is a minimal 'reach' or 'encounter'. To demonstrate this sense further, we can consider examples (10-20); hit the surf, which Greenberg derives from hit the road, belongs to this group. The beach of (10-12) is a metonym indicating the activities of sunning or swimming (10), fishing (11) or clamming (12); hit the sand (20) also suggests sunning or swimming, and hit the water suggests swimming in (16) and has an explicit accompanying swimming in (17). Hit the beach of (13-14) is FROM THE SEA, as is hit the land (15); in (13), marines (e.g.) come ashore. Both beach (10-14) and water (16-19) convey different total meanings in different contexts; physical contact is more prominent when the context indicates a particular action, as in (14, 17-19).

The use of the in these examples, while sometimes required, is not inexplicable. Road or beach, when particular, refer to known beaches, especially in informal speech; when these nouns are types, there is only one road or beach, symbolic of all travel or vacationing. The indefinite article is possible (hit a beach), but only for a particular, and usually unknown, road or beach. Demonstrative pronouns are also possible: that in (27). In examples (21-30), providing "encounters" both in water and on land, the use of the is regular in each case, whether particular or type; a occurs sensibly in (26). Again, physical contact is more apparent in sentences dealing with specific circumstances. In (27, 29-30) the content of the sentence also suggests the sense of 'hindrance'. Another obvious metonym, acting as a type, is bricks in (31-33). Bricks indicates a street, a medium used by a cabdriver (31), a policeman (32), and picketers (33). The usefulness of such a metonym is highest in informal speech, where everyone is "in the know." Of course, a foreigner may have trouble with it, or any metonym; but a foreigner's difficulty is not, as Makkai (1977:475) believes, a reason for calling something idiomatic.

Road, beach and the other objects can be generalized with additional examples (34-65) as "places." The object can be a general location (place (34), area (46)), a place name (the Cape (39), Maryland (40)), or smaller locations (hotel (44), room (45)). In (34-50), hit seems to mean minimally 'arrive at', 'get to' (except (43), which is not limited to movement, but indicates 'to ever live in'). However, examples (51-65) (and perhaps (48)) suggest 'use' because purposes are implied: bank 'to cash a check' (51), supers [=supermarkets] 'to shop for groceries (and see which is best)' (52), record stores 'to determine which songs are popular' (53), [bomb] shelter 'to survive bombing' (54), sun deck 'to do their thing [=to dance]' (55), sea 'to fish' (56) and slopes 'to ski' (57). Slopes is another obvious metonym like rails and bricks. Examples (58-63) suggest eating or forms of

entertainment; bars implies 'to drink' in (64) and 'to make a pickup' in (65). But "place" is not an adequate generalization for hit-objects, as (66-70) show. These also have implicit purposes: shuttle 'to travel' (66) (note link to road, etc.), trade mart 'to trade players' (67), whirlpool 'for physical therapy' (68), campgrounds 'to camp' (69), and phones 'to make phone calls' (70).

The diversity of hit-objects and their effects can be seen in (71-129). More metonyms appear in (71-77): ice for hockey (71), floor for basketball (72) and exercise (73), stair for going to bed (74), door for quitting a job (75) and leaving (76), and couch for psychiatric help (77). Hit is usually defined as a temporal event, but (84-85) show that it can also indicate spatial relationships. Returning to the temporal, the objects of (86-90) are time-expressions; Thanksgiving in (87) carries the extra sense for football fans of 'late in the season'. These time expressions relate to the phases, stages, and measurement expressions of (91-111), of which (102-110) also have an extra 'ameliorative' sense and (111) a 'pejorative' (compare the "hindrances" of (27, 29-30)). The measurements could be considered abstract locations, some of which would be evaluative locations. Hit-objects can also indicate various elements of the communication media (112-121); these relate in turn to the various "markets" of (122-124). Examples (125-29) show the metonymic versatility of street: 'for sale' (125-26), 'go outside' (127), in search of jobs (128), 'be a prostitute' (129). Street in (125-26) can also symbolize ALL places of sale. It then exemplifies what I have called PRAGMATIC GENERALIZATION, where a specific example suggests the class of which it is a member; proverbs are the best examples (Ruhl (1977:461)). These examples show that understanding hit and its ways is linked to understanding linguistic INDIRECTION, a pervasive quality of informal speech.

Several of Greenberg's other idioms can now be accounted for. In hit the books (2), books is a metonym for studying; in this particular sentence hit the books also stands for college, of which studying is a part. In hit the bottle (130), bottle is a metonym for drinking, as is sauce (131); plum wine (132) shows that the pattern is productive, and the pejorative sense noted by Greenberg also appears with skids (133-34). In hit the sack (135), sack is a metonym for sleeping, as is pillow (136-37) and bed (138); this particular sentence with bed evokes the sense of physical contact. Examples (139-50) have objects denoting "floor"-surfaces, and evoke situations associated with "floors" and their properties. In hit the deck (139), deck is a metonym for lining up for inspection, getting to work, or getting down out of danger. Ground parallels deck in this last sense (140), but is more "literal" in (141-2); 'point was lost' emerges by inference from (141), 'dead' from (142). Although it may seem too obvious to mention, knowledge of gravity and its effects plays a part in the interpretation of (142) and the floor of (143). Dust (144-46), dirt (147), tile (148), sidewalk (149) and concrete (150) are more specific nouns and thus evoke more of a physical

sense.

The sense of physical contact becomes more pronounced in (151-65), but this apparent discrete sense is not as simple as our definitions make it. Example (151) describes a physical contact but it also has an implied purpose, 'to open the lock', and appears to be a form of understatement for literary effect. That effect is to force the reader to supply part of the meaning, and thus be engaged in the story; this involvement by indirection or incompleteness is an essential feature of informal speech. Physical contact is also present in (152-59), but it does not appear essential; we again have the general sense of 'encounter'. It is not until examples (160-65) that we get the direct "head-on" type of hitting that seems to come to everyone's mind when hit is considered in isolation.

But physical reality is much more than sharply defined physical surfaces; in (166-75), the physical sense, though present, is less pronounced. Fog in (176) and rain in (177) are physical, and in (178-79) air and wind are "agents"; but the sense of 'encounter' is more prominent than the physical reality. This tenuousness of the physical reveals that hit is not basically concrete, but neutral to the concrete-abstract distinction. This distinction, in fact, becomes tenuous as an absolute distinction when physical realities other than objects are investigated. If we assume that hit is neutral to concrete-abstract, the variations of meaning in (181-89) are more understandable. Air suggests 'go outside' in (181), parallel to street in (127); it is slightly more physical in (182), and slightly more abstract in (183), where it seems metonymic for something like 'be heard' or 'be realized'. If hit is neutral, the creativeness of (184) is not the effect of breaking any rule of meaning but of exploiting an elusive possibility. I believe that the genius of creative writers lies essentially not in breaking rules (as is often claimed in our slight attention to metaphor), but rather in realizing existing linguistic possibilities that less creative people never imagine. Light also has various possibilities: physical in (185-87), more abstract in (188-89).

Consider now Greenberg's 'agent' and 'target' senses. The semantic range of hit covers both agentive and non-agentive, as the preceding examples show; thus, I conclude, the 'agent' sense is also inferential. Furthermore, in spite of the frequent use of the notions Agent and Instrument in linguistic analyses, we have barely begun to explore the various ways of expressing agency in a language. An instrument usually appears in linguistic examples after the preposition with; but our understanding of hit is clouded because we have not fully grasped the role of IMPLICIT instruments. Thus, hitting with one's hand or fist and hitting with a gun are often cited as discrete definitions if hand and gun are not explicitly stated. Examples (190-98) show some implicit instruments: shoe (190), part of body (191), car (192), motorcycle (193), hammer (194), bullet from gun (195), airplane (196), voice (i.e., when speaking) (197), fingers (198); the last example has the same understated effect we saw in (151). The

'target' sense is also inferential. It is highlighted in (199-221) in many guises, both concrete and abstract; these examples blend into (222-27), where the sense of 'target' weakens. Note that stride (225-27) is both concrete and abstract. In a very productive pattern, the notions of agent and target combine with implied instruments and purposes in examples (228-33).

We turn to Greenberg's 'vigor' in examples (234-94). The sense of intense impact or drastic effect sometimes conveyed by a sentence with hit can be achieved in several ways. In (234-39) the modifier hard and related forms are explicitly stated; in (240), deeply. The subject noun describes something with known drastic effects in (234-59), although in (257) it is hyperbole; all effects are bad except (258). In (260-70), the effects are less drastic, because the subjects are less drastic; the sense of impact derives from understanding the significance of the situations being described. Examples (270-79) present various mental impacts; (275-76) relate directly to the use of hit in It hit me that... The use of home in (278-79) plays on its ego-reflexive overtones. The intensity of hit in these examples is variable, although all share some sense of being relatively sudden and unexpected. Examples (280-94) show variations of 'attack': 'penalize' (280), 'criticize' (281-83), 'attack militarily' (284), 'rob' (285-86), 'bomb' (287), 'kill' (288); again, the contextual information (e.g., thieves in (285)) determines the specific interpretation. Examples (289-94) evoke a weaker sense of simply imposing on someone/something, the purpose sometimes expressed in a for-phrase (291-94); the senses vary from mild (289) to harsh (294). Examples (281-94) also show that hit is a favorite word of headline writers, because it is short and so semantically versatile.

I have argued that specific meanings are determined by pragmatic factors of metonymy, generalization, specialization, amelioration, pejoration, hyperbole, and understatement interacting with a single inherent general sense to produce a potentially very large number of possible interpretations. An implication of this view, illustrated a number of times already, is that a word or phrase with a single meaning can nevertheless be highly ambiguous. Another illustration of this point is the phrase hit it in (295-300). It means 'high speed' in (295) (i.e., 'they're going fast'), 'the ground' in (296) (i.e., 'someone's shooting at you; get down'), and 'older age' in (297) (i.e., 'they're getting pretty old'); these sentences relate to (99), (139-40), and (88-89) respectively. It in (298-300) relates to the target senses noted earlier. Since the meanings of hit it are so variable and seemingly unpredictable from the two words, the mechanist mode of semantic analysis would have to posit several idioms.

The view I am proposing thus has the following advantages over the usual, mechanist view: (A) It explains why all these senses can be represented by hit. (B) It assumes less irregularity in the language, while dealing with a more diverse set of linguistic abilities. (C) It makes linguistic and wordly knowledge highly interdependent, and thus achieves a simpler theory of

mental processes. The mechanist, positing discrete senses, must still assume that wordly knowledge will disambiguate sentences. Thus, the positing of the discrete senses is an unnecessary complication, especially when we consider how many would be needed for a verb like hit. By straightjacketing meaning into so many discrete pieces, the mechanist view also assumes a more rigid and less versatile language. (D) By using such notions as metonymy and specialization as necessary elements in a synchronic theory, my view also links directly to these processes of diachronic change, and thus provides the basis for such change. In short, the basic failing of the mechanist view is that it attempts to minimize the interdependence of linguistic and wordly knowledge by trying to explain natural languages as self-sufficient entities. The mechanist idealization -- described on the first page of Chomsky's *Aspects*, but neither original nor unique to Transformational Grammar -- attempts to simplify linguistic research by limiting the range of relevant data; but it is now clear that some alleged linguistic irregularities are created because the relevant generalizations require a wider vision. Language does not carry as much meaning as we have assumed. The typical mistake of any idealization is that it tries to do too much: in attempting to analyze language in isolation, the mechanist attributes meanings to linguistic elements that really arise extralinguistically.

The same point can be made about the mechanist's attempt to ignore figurative meaning. In its infatuation with "literal" meaning -- a result, I would argue, of confusing natural language and a desired precise scientific language -- the mechanist view tends to minimize the role of figurative language; to the contrary, as we have already seen, it is pervasive. By attempting to ignore figurative language, we merely misanalyze it, because in fact it cannot be ignored. Consider now examples (301-304). These sentences are the last resort of the idiomatic view, apparently the most resistant to explanation. It cannot be denied that the hit-phrases are set phrases; but, then, I would not deny that hit the sack, hit the road, etc., are also set phrases, stored whole for easy, frequent use. Nor can it be denied that these phrases are not to be interpreted literally. But being a set phrase or not being literal is not sufficient to make something an idiom. The fundamental question to be asked is this: why are these phrases used in the way that they are used? If there is no apparent reason, nothing except an arbitrary connection of phrase and sense, then these would really be idioms. But their use is quite clear in figurative terms. Hit the roof (301) and hit the ceiling (302) indicate rising anger, and roof and ceiling symbolize, with perhaps a touch of hyperbole, a very high intensity of anger. There may even be psychosomatic reasons that make these phrases more literal, but in any event the phrases are not idiomatic because their meaning exploits the semantic possi-

bilities of their constituent words. Examples (303-04) appear to operate metonymically, evoking 'accuracy' in (303) and 'unfairness' in (304); both can also be viewed as examples of pragmatic generalization.

Instead of the mechanist view, we need an ecological or holistic view. Such a view, taking seriously the fact that linguistic knowledge is largely unconscious, makes a more modest appraisal of the linguist's ability to intuitively understand the language. This view does not rely on conscious introspection, because the conscious mind is likely to see only data of high salience; it is the selectiveness and literalness of the conscious mind that creates the illusion of a basic sense out of the physical, the active, and the intense possibilities of *hit*. The range of data shown here is not accessible to consciousness, and must be collected in large amounts both to show the real facts and to overcome the restrictive theories of the conscious mind. It should go without saying that the data included here is only a start in a full analysis of *hit*; I have omitted intransitives and discussed only in part how modifiers modulate the semantic possibilities. I have also said nothing about the paradigmatic partners of *hit*, such as *strike* and *touch*. The unity and range of these two verbs is also underestimated in current analyses, but it is significant that *touch* does not range into intense senses; perhaps the illusion that *hit* and *strike* are basically intense comes from our habitual contrast between their potential intensity and *touch*'s lack of it. Finally, the ecological-holistic view is also a humanistic view. The mechanist view grossly underestimates human linguistic abilities, and the careless use of the term IDIOM in modern semantic research betrays an impoverished understanding of human capabilities and needs. Inhumanities created by definition and restrictive theories are the most insidious of all, because they provide the justification for other inhumanities. Linguists who wish to be humanists, and yet who have accepted the mechanist view without question, should find in the data of this paper an occasion for soul-searching.

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1. I'm in a bar now near Columbus, Ohio, pausing before hitting the road again. (Bennett Kremen)
2. More and more students are hitting the road instead of the books. (Time)
3. ...I think the best thing for you to do is turn left, go through Titusville, and then hit the highway. (Carolyn Keene)
4. "Latch, it'll be sooner if you hit the trail with that Leighton and his outfit," declared Carson blumty. (Zane Grey)
5. The President has been hitting the campaign trail again... (Paul Duke)
6. The hounds hit a trail and went barking off on it." (Jim Kjelgaard)
7. Ford Campaign Hits Rails... (headline, Virginian-Pilot [VP])
8. "Let's hit the grit, partner," quickly they mounted and crossed the little valley. (W. C. Tuttle)
9. Finally I saw Lew come out and get into his car. I followed. He hit the outer drive and proceeded south... (John J. Healy)
10. Junior asks Dad if he'd like to hit the beach. (Lawrence Maddy)
11. Match the weather reports and try to hit the beach before and after a storm, and even during it. (Joseph D. Bates, Jr.)
12. To get yourself a bucket of clams, you ought to hit the beach at low tide... (Peggy Payne)
13. When the first forces hit the beach. (Mastep's Third [M3])
14. There was a splat of ocean breakers hitting the beach... (Lawrence Maddy)
15. "It's when we hit land that I'm worried about." (Mary Deasy)
16. "Only thing to do on a day like this is hit the water." (Dan Mackerleid)
17. Brandy had already leaped over the gunwale and hit the water swimming. (Rabon Rodgers)
18. Full pressure is applied the instant the lure hits the water. (Joseph D. Bates, Jr.)
19. In another instant the car hit the water and dropped immediately out of sight. (Arna Bontemps)
20. For some unexplained reason children develop a towel fetish the moment they hit the sand. (Erna Bomback)
21. He waited, until the fellow hit the shallows on the east side, pony wading behind him as he gripped the wet reefs. (Jackson Cole)
22. ...he thought that now, soon, he must hit the edge of the stream. (Ernest Hemingway)
23. Mid-depth trolling is comfort zone trolling, and the closer we hit the level preferred by the kind of fish we seek, the better our luck will be. (Joseph D. Bates, Jr.)
24. The half-completed canal had been planned wrong. Its upstream end let out of a backwater, where the current was unlikely to make itself felt, and the downstream end would hit the river at a spot the Confederates could easily reach with the guns at Vicksburg. (Bruce Catton)
25. Just then the horse and buggy hit the curve, skidded widely, almost throwing the horse off its feet. (W.C. Tuttle)
26. The truck hit suddenly a stretch of wide, hard road... (Truman Capote)
27. You'll be especially appreciative of a light [bicycle] frame when you hit that first hill. (Dick Teresi)
28. I hit the gap in the hedge and dodged around the angle that masked the front door. (Raymond Chandler)
29. ...then hardly 100 feet ahead Sideburns hits a wall of traffic himself... (Tom Motte)
30. I hit red lights at only four of nearly two-dozen controlled intersections. (Jim Schierer)
31. I gotta hit the bricks and make a buck." [said Mike Nomad] (comic strip, Steve Roper and Mike Nomad)
32. As soon as I hit the bricks and started cruising I began thinking about the case I had this afternoon. (Joseph Neumaugh)
33. ...a dispatcher told crews to "hit the bricks," and the firefighters went back to picket lines. (AP)
34. "The minute you hit that place, you'll talk." [said Lou Grant] (TV, Mary Tyler Moore Show)
35. The first photographer hits the scene... (Jeremy Lamer)
36. "...this is the first place they'll look when they hear I've hit town." (James Tate)
37. "...It's generally close to 11 when Judy hits home." [said Nan Powell] (Lloyd Shearer)
38. I'd hit the house about four o'clock... (Connie Etie)
39. He was running low on gas when he hit the Cape. (Mary Higgins Clark)
40. About the time they hit Maryland, Profane decided to get it over with. (Thomas Pynchon)
41. The trucks hit billings at the beginning of the afternoon rush hour. (David Snell)
42. As soon as Flamand hit California he was drafted... (Jack Ludvig)
43. To listen to George, though, you would have thought that Vinnie was the toughest guy ever to hit Brooklyn. (Jay Neugeboren)
44. So we went along like this and every once in a while we hit a tourist hotel... (Saul Bellow)
45. We checked into a motel in St. Louis. I let King sign us in. Soon as we hit the room I eased the drapes back and watched the front office. (Frank Hohner)
46. This is the strongest act to hit the area in a long while... (Bronn Corpus [BC])
47. As soon as the Jews hit the narrow valleys Vered's high, girlish voice broke into song... (James A. Michener)
48. When King had asked his buddy, "Do you think we can get across the mountains?" Lindergh had said, "It won't do any harm to try. The mountains are lowest in the south, and we can hit the passes." (Jack Keeler)
49. You may have to hit several more canyons before you can let the dogs go... (Bob Hugel)
50. Kings, Stivers [Salmon] Hit North Coast (headline, San Francisco Chronicle [SFC])
51. "It's payday, kid! I gotta hit the bank and run a personal errand." [said Mike Nomad] (comic strip, Steve Roper and Mike Nomad)
52. Well, the way is, let the missus here hit the supers [supermarkets] during the week. (Edward Hammbal)

53. "It's just a matter of hitting the record stores, listening to the radio, and knowing what's hot," said James... (New Yorker)
54. The air was filled with barked orders. "Hit the [bomb] shelter." Pop." (Isaac Asimov)
55. Anytime a song resembled anything you could dance to, they would hit the sun deck to do their thing. (William Irwin Thompson)
56. ...they can't wait to get another boat and hit the sea again." (Gail Bolger)
57. But that's all you need to hit the slopes. (David Sherif)
58. We ought to hit Baskin & Robbins before we go back. (Clayton Reave)
59. ...I knew it was time to eat. I couldn't decide whether to hit China-town or Little Tokyo today. (Joseph Hambaugh)
60. ...we decided to hit Gaslight Square because it was lively... (William Goldman)
61. One night in the spring of 1940 I did the town with Pep and Etienne, hitting the jazz joints along Hollywood Boulevard and the Sunset Strip. (Budd Schulberg)
62. "Listen, let's hit the Tropics Club." (Dan Wakefield)
63. "Honey, let's eat and hit the flicks." he says. (Vance Bourjaily)
64. ...he hardly ever hits the bars. (Cecilia Blanchfield)
65. ...she didn't feel like hitting the bars. (Judith Rossner)
66. The Mets will be hitting the N.Y.-Montreal snuggle pretty hard. (Dick Young)
67. The Philadelphia 76ers and Buffalo Braves were without first-round choices, so look for both to hit the trade mart. (Bob Wolf)
68. About the only thing Taylor is hitting these days, however, is the whirlpool in the Redskin training room. (Leonard Shapiro)
69. Of course there are other excellent private campgrounds we just never got to; you can't hit them all in one season of camping. (Ray LaBoone)
70. He leaves the capitol around 6 p.m., goes home and eats dinner, gets into bed and hits the phones again. (Marguerite Michaels)
71. At the start of their pre-game skate, the Red Wings hit the ice in single file... (George McEllean)
72. Smith played everyone rather extensively, and several new Tar Heel combinations hit the floor last night. (Carol Fincke)
73. With the same energy, she hits the floor for daily exercise. (Judith Max)
74. As soon as his wife's footsteps hit the stairs, he would take a rumpled pack of Camels out of his pocket and begin to smoke. (John Updike)
75. I was about to quit a hundred times. Once I was just ready to hit the door, but I saw this satisfied smile on my foreman's face. (Bennett Kremen)
76. "I've never been one to oversay my welcome. I wanted to hit the front door while they still wanted me to stay." [said Darrell Royal] (AP)
77. "I was well into my thirties before I hit the couch." (Movie, The World of Henry Orient)
78. ...after he hit college... (BC)
79. The slender young man [Jerry Pate] hit the [golf] tour with the greatest impact of any rookie since Jack Nicklaus in 1962... (AP)
80. ...and what do I do with it? Play poker with it. Buy liquor with it. Spend it like a kid the minute I hit civilization." (C. E. Scoggins)
81. A beginner, Blankenship advises, should do the same thing an expert does when he hits a slump -- practice the basics. (Bill McKonn)
82. "When he [Zajonc] first hit the varsity," says coach Dean Smith, "I didn't think he'd ever play." (Bob Lipner)
83. This means that a particular item is related to these "features" rather than "picking them up" as it hits the semiotics. (William J. Sullivan)
84. A little skinny thing -- he must have hit me up to here [waist] (Janice Jacob)
85. [A sweater with a sport's letter -- M for Wordsworth -- on it:] The M hit me along about a very private part of my body; the bottom hung below my knees. (Winston M. Estes)
86. The Redskins need to hit the league season with everyone healthy..." [said Jack Pardee] (AP)
87. "You can't be going downhill once you hit Thanksgiving." [said Jack Pardee] (AP)
88. "Face it, Li, you're hitting the time in life when you need someone around, someone solid." (Barbara Howard)
89. I'd think she'd have found a husband before she hit middle age. (Comic strip, Mary Worth)
90. When you hit the middle sixties. (M3)
91. You've hit this phase once before and it took you a while to get your head back together. (Angel King)
92. He's hit the stage of incredible enthusiasm. (William K. Riley)
93. They hit the halfway mark in their schedule... (Ian MacDonald)
94. ...they pulled away to a 40-27 advantage before hitting the half with a 52-39 lead. (AP)
95. Once the pacers hit the stretch after a 1:30 three-quarters things still looked good. (Doug Gurlbert)
96. In the fourth race, at seven furlongs, the three-quarter mile post was hit in a sparkling 1:10.2, very fast time. (Shirley Povich)
97. ...although the mercury never hit zero, it did get mighty near there. (Langston Hughes)
98. A race is all the Dodgers would have needed in 1977 to hit three million. (Gordon Verrell)
99. Motor-paced racers [bicycles] routinely hit speeds of 50 to 60 mph. (Dick Terezi)
100. The panic of the alcoholic who has hit bottom is the panic of the man who thought he had control over a vehicle but suddenly finds that the vehicle can run away with him. (Gregory Bateson)
101. The British pound sterling hit an all-time low today... (Walter Cronkite)
102. It is of course too early to tell whether Martine's solution by way of functional classification hits the exact midpoint [between too precise or too vague a conception of universal grammar]... (William

103. driven) As can be easily seen, their [=wish's] aim is to encourage thrift and a wholesome simplicity of living, to promote domestic and communal solidarity, and to hit the golden mean between too much ease and comfort and too little. (Albert Jay Nock)
104. the flowers of the dogwood, which are just hitting their peak... (Durham Morning Herald)
105. The rivalry hit its zenith in 1976... (Frank Vehorn)
106. Works on paper hit superb level. (headline, Virginian Pilot-Ledger Star)
107. Unemployment rate hits bright note. (headline, The News and Observer [NOJ])
108. Attendance in Cleveland still has not hit expectations. (Leo Monahan)
109. Beaufort hit archeological paydirt on his first landfall, Patara, more or less opposite Rhodes. (Afred Friendly)
110. Boats hitting Jackport off South Beaches. (headline, SFC)
111. Post-disaster evacuation also hits snags. (Wesley Marx)
112. The elementary fact that the break-in had been financed with campaign funds did not hit the newspapers until August... (John Dean)
113. No wonder these stories hit the front page of The New York Times... (Stephen Jay Gould)
114. On February 26, the day Time's edition hit the newsstands, Bernstein spent the morning at Justice... (Carl Bernstein & Bob Woodward)
115. ...the day before his revolutionary book hit the stands... (Stephen Jay Gould)
116. Helpful Cookbooks Have Hit the Counter. (headline, Ledger-Star [LSJ])
117. "As soon as the story hit the national wires, my telephone rang again," he related. (Randy Galloway)
118. Another aquatic series hits the air waves. (headline US)
119. For years, ever since the ads hit newspapers, TV and billboards, I've been trying to find a way to escape riding the harrowing Loch Ness Monster in Busch Gardens. (Guy Fiddell)
120. When the bubble machine [Lawrence Welk Show] hit the big tube in 1955, it knocked Sid Caesar off the air... (Carol Burton Terry)
121. this recording will hit the jukeboxes soon. (43)
122. sweet corn hits the markets in New England in midsummer. (43)
123. Along with country music, identity crises and encounter groups, abstract art has hit the heartland. (Jean Stafford)
124. One of the newest highs to hit the legal drug scene is actually one of the oldest. (Howard Smith & Leslie Harlib)
125. It's [a bestselling book] made before it hits the street. (Kathryn Morton)
126. ...the first edition had scarcely hit the streets before Governor Paul D. Hiram was on the telephone. (Tom Wicker)
127. When he hit the street he was exhausted. (Bernard Malamud)
128. Some 200 CIA secret agents who have received pink slips in the first wave of a planned two-year cutback in covert personnel have been hitting the street in search of jobs. (Time)
129. Clare, 16, having run away from home, met a pimp along Minneapolis' Hennepin Avenue and moved in with him. He persuaded her to hit the streets. (Time)
130. "she hits the bottle pretty well" sometimes but then so do I." (John Updike)
131. "He hits the sauce every once in a while, but nothing serious." (Bernstein & Woodward)
132. "I bet you been hitting the plum wine again," she said joyously. (Hal Bennett)
133. But he must have hit the skids after that, drink being the reason that was reported to me. (Robert Penn Warren)
134. before the Stixers hit the skids, they pulled off a major victory. (Jim O'Brien)
135. After dessert, we placed the cooking equipment under the tarp, and hit the sack. (Roy Hunter)
136. He had gone to sleep almost immediately after his head hit the pillow. (Caroline Gordon)
137. He hit the pillow and slept for a fragment of uneasy time... (Dan Makefield)
138. He switched off the light and felt his way across the room in the darkness and hit the bed as if it were a tacking dummy. (Winston M. Estes)
139. "Sweeney Blue, hit the deck." (BC)
140. "All of us hit the ground and stay there." (Robert Traver)
141. At this moment the volleyball hit the ground. (BC)
142. "Three shots in that fella tore he hit the ground." (BC)
143. In deadly earnest, the besiegers methodically stripped away portions of the roof and tossed lighted rags inside, only to have most stamped out by the women as soon as they hit the floor. (BC)
144. ...the attackers hit the dust in the face of the withering enemy fire. (BC)
145. The Ranger was out, Colt ready, boots hitting the dust of the road. (Jackson Cole)
146. The scout went on past them at a gallop and lost could hear the black's hooves ring on the bridge plank, then quiet as he hit the dust of the road on the west bank. (Jesseawyn West)
147. I braked hard, hit the dirt, cut my own tight and U-turned. (Ross Macdonald)
148. In the dark, I hear her rubber heels hit the tile... (Ken Kesey)
149. Steps hit the sidewalk and I went over to the front door and opened it. (Raymond Chandler)
150. Something tugged at my trouser leg and spun me. I got a tight grip on air and hit the concrete like a sack of sand. (Ross Macdonald)
151. I'm mopping near the ward door when a key hits it from the other side and I know it's the Big Nurse... (Ken Kesey)
152. I sat in my seat and didn't even breathe until I heard Reverend Carson's big feet hit the bottom step. (Anne Moody)
153. But Bob's bad leg dragged a little and his foot hit a crack. (Robert Arthur)
154. The Lone Wolf smashed through the opening, kept rolling as he hit the

155. porch, and rolled off onto the dirt. (Jackson Cole)
156. Just past the entrance there was a wet spot on the pavement. The speeding car hit it and spun out of control. (Ernest K. Gann)
157. Instead, straddle the edge, get back with a sharp turn and a quick return to the straight-ahead steering position the moment the tire hits the pavement. (Jim Liston)
158. ...my right front wheel hit a pothole. (Lawrence Madry)
159. When the sinker hits a shoal the area can be probed for its size and shape. (Joseph D. Bates, Jr.)
160. But in a few feet he [sank] hits the sheet of ice rimming the lake and starts sliding. (Bill Tarrant)
161. ...the third of cards hitting the board in the far corner of the room... (Ingis Fletcher)
162. He spotted a mousetrap on deck, picked it up carefully and heaved it down the passageway. It hit a bulkhead and went off with a loud snap. (Thomas Pynchon)
163. In a minute a quarter came shooting out under the desk. It hit the wall and spun around on the floor. (Earl MacRae)
164. This time [as he was digging] Joe's spade hit the object which had been buried. (Franklin W. Dixon)
165. At that instant the canoe hit an underwater obstruction head on. (Carolyn Keene)
166. Muskies are attracted by the propellor and the wake to the extent that many have been hit by the blades. (Joseph D. Bates, Jr.)
167. ...the wind hits the steep cliffs and flies up over them. (Anthony Bailey)
168. ...the spitting crackle of the flame hitting the water drops on the catfeepot. (Nancy Pelletier Pansting)
169. Two boys were killed during the Cleveland storm when they were hit by lightning as they took cover under a tree. (JPI)
170. The strong current hit my knees and thighs and water sprayed up against my chest. (Johnny Greene)
171. In general, there are three categories of taste. The first occurs when the wine hits your lips. (Creighton Churchill)
172. He inhaled five or six quick times until the heat from the cigarette began hitting his lip. (William Goldman)
173. Striking another match, she got the cigarette lit and inhaled, coughing as the smoke hit her throat. (William Goldman)
174. Gusts of beery breath hit my face from six inches range. (James Herriot)
175. "And when his voice hit my ears, I made a spin-around..." (Austin Clarke)
176. ...the door opens, a solid wave of conversation and animation surges out and hits you... (Jane Jacobs)
177. The sky is clear, but shortly after we pass the tightbucklet, 12 miles out [at sea], we hit fog. (Ed Neal)
178. ...we went through [in a plane] at eight thousand [feet] and only hit a little rain... (Ernest K. Gann)
179. The night air hit them like a clean bath. (Dan Wakefield)
180. It [a dry wind] hits the plains and comes across Alberta and Saskatchewan like the breath of a blowtorch. (Wallace Stegner)
181. ...at that moment the plane hit an air pocket. (Piers Paul Read)
182. As soon as I hit the open air, Madrid was all jewelry and art to me... (Saul Bellow)
183. Steam emerging from scores of safety valves turned into vapor as soon as it hit the cold air. (Joseph Kraft)
184. But the man who creates the music is hearing something else, is dealing with the roar rising from the void and imposing order on it as it hits the air. (James Baldwin)
185. Trains passing appeared to emerge from a tunnel of trees and, hit for a second by the cold sky, vanish terrified into the woods again. (Flannery O'Connor)
186. The light hit his face. (Sterling Hayden)
187. "But he sure sat up quickly when the beam of the flashlight hit him." (Peter Matthiessen)
188. A monument stood shifting in the distance, hit by a ray of sun... (Ayn Rand)
189. The successive images tend to freeze in your mind, because the light flashes off before the usual optical blur of the motion can hit you. (Tom Wolfe)
190. "These leather heels are awfully tricky. I hit an ordinary piece of wax paper in the street the other day and went down." (Saul Bellow)
191. Going out, he stumbled over a rug, and trying to recover himself, hit Louisa's work-basket on the table, and knocked it on the floor. (Mary E. Wilkins Freeman)
192. Marvin hit a car on the way to his parents' house that night... (Joan Kerchhoff)
193. "She was riding a motorcycle, hit a wet spot and went off the road." (comic strip, Rex Morgan, M.D.)
194. "Barbara did the carpentry. You should hear her swear when she hits her thumb." (Robert A. Heinlein)
195. "He fired two shots ten years ago at a car that used his driveway to turn around." He only meant to shoot out a tire. "Yes, but he hit the windows." (Saul Bellow)
196. [Imagining:] ...I hit the trees and my airplane twisted and somersaulted and sank in the dark-green water. (Richard Bach)
197. Always hit the message-bearing words firmly. (W3)
198. He sat there and stared at the typewriter, a Smith-Corona portable with no paper in it. Somebody was paying him to hit those letters and make words. (Edward Hemmibal)
199. "Fossarian, did the bombs hit the target?" (Joseph Heller)
200. That [fight] of Lindergh stands out preeminently because he went absolutely alone and squarely hit his objective. (Scientific American)
201. The crew said that they had approached from out of sight of land, and without any knowledge of navigation, had hit the island dead on. (Horace Beck)

202. When bass hit a topwater lure, the fun is fast and furious (Joseph D. Bates, Jr.)
203. The shark closed fast astern and when he hit the fish the old man saw his mouth open... (Ernest Hemingway)
204. The poet William Cowper called Newton a 'childlike sage' for that quality, and the description perfectly hits the air of surprise at the world that Einstein carried in his face. (Jacob Bronowski)
205. 'Actually, those sermonizers never did hit the basic facts about me.' (Sara Harris)
206. None of these analyses seem quite to hit the main characteristic. (R. D. Ellmann)
207. Yes, that was surely the "summation" of the play and Tertan had hit it, as he hit, deviously and eventually, the literary point of almost everything. (Lionel Trilling)
208. As in other things, when we deliberately try to hit a subtlety that is new to us, we find it very hard. (Paul Goodman)
209. writing that hits the public taste precisely. (KJ)
210. ...if William could hit precisely the right promotional note... (BC)
211. advertising techniques designed to hit the subconscious mind. (KJ)
212. Also if they [scamblers] hit the number or scored heavily with the bookie, they could avoid the taxes... (Gay Talese)
213. I know a real loser. He's the kind of guy that goes to the track, hits the daily double, it pays \$6, and that day he has a partner. (Mit Moss)
214. He didn't hit all the notes [on an instrument]. (Charles Beaumont)
215. Opera goers often complain that they cannot understand the words when a soprano hits her high notes. (Wright Boginger)
216. If he hits the wrong key, he hears the wrong note. If he doesn't hit the nail squarely on the head, it bends... (John Holt)
217. The guitar hit a lovely A-minor chord... (Jean Shepherd)
218. 'Shall those peas in the pan?' she ordered. "The floor isn't the place for them." "I can't hit the pan, Mommy!" (Augusta Stevenson)
219. Whenever the othmen drilled, east and west, north or south, they hit oil. (Nathan M. Adams)
220. spent years in prospecting without ever hitting gold. (KJ)
221. Even before he hit big money, he had begun buying modern paintings (BC)
222. [It] took him some time to hit the better magazines [publishing]. (KJ)
223. The history of English is long and complicated, and we can only hit the high spots. (Paul Roberts)
224. ...Mr. Ford has long hit nearly all the themes Reagan has... (Nick Thimessen)
225. ...the Patagonian camel's plunge, dip their necks, and appear to stumble violently before they hit their stride. (George Gaylord Simpson)
226. ...Stapledon hits his stride with a dispassionate account of the rise and fall of eighteen distinct species of man... (Gerald Jones)
227. They [basketball team] hit stride midway through the first half...
228. (Dan Collins)
229. ...Doug hit the brake. (Vance Bourjaily)
230. Racing out the door that cold, blustery morning, you hop into your car, buckle up, hit the starter, and -- nothing. (Michael Lamm)
231. As the cashier hit an alarm, the woman fled. (JP)
232. ...horn hit the gearshift, gunning the car backward. (David Seitzer)
233. He hit the radio button. (BC)
234. At 200 feet, the pilot hits the switch to retract the wheels. (JP)
235. Runstrom's companies were hit hard by Florida's construction slowdown and sinking small boat sales. (Forbes)
236. hooks said he is aware that increased energy costs resulting from deregulation would hit poor families disproportionately hard. (William Raspberry)
237. A blizzard came up four days before that primary, but it didn't hit that state half as hard as that TV blitz and the Anderson campaign. (Tom Wicker)
238. A deep depression hit me so hard that even my physical movements became leader. (Jeb Stuart Magruder)
239. A year later the energy crisis struck, hitting hardest those poorer nations lacking both oil and fertilizer... (Thomas Y. Canby)
240. The people hardest hit by this suspicion are, of course, Christians on the mainland of China. (BC)
241. The loss of that factory crawler hit him more deeply than it should have. (Frank Herbert)
242. The dizziness hit him momentarily when he stooped to lift the canvas flap... (Fred Bodsworth)
243. A kind of panic hits him, a kind of sickness. (Wendell Berry)
244. But I came home one day, reached up for the switch to turn off the light and the pain hit my elbow. [said John D'Acquisto] (Art Spender)
245. Slow decomposition is necessary to keep a man from being hit by the diving disability called the "bends." (Jack McMenemy)
246. And six months later Schallier wrote me that dismember had hit the pack [of dogs], leaving only nine survivors. (Robert Ardrey)
247. That fall, a rabies epidemic hit the fox population. (Laura White)
248. ...just beyond Denver, they got hit by a blizzard (Laura White)
249. "...the tornado struck two or three years ago and hit a barn north of Lowry." (Luther P. Gerlach)
250. Floods hit first leg of Safari Rally. (headline, SFC)
251. ...we know the location of at least one other buried house apparently hit by the same mudflow... (Richard D. Daugherty & Ruth Kirk)
252. Many of the roads also were hit by an unusually severe winter. (BC)
253. Our present inflation problem stems from a series of special shocks that hit our economy. (William E. Simon)
254. It [inflation] hits the new car buyer from all directions, but mainly in fuel costs and new car prices. (John Lamm)
255. ...[he] stripped himself down again [in space ship] and relaxed as the acceleration hit him. (Robert A. Heinlein)
256. ...the most surprising series of upsets ever to hit the four major bowls in one day. (New York Times News Service)

256. Mortgage Blues hit More Homes. (headline, VP)
257. The invasion of Italian movies that hit the United States in the fifties and sixties probably contributed to this. (Alvin Toffler)
258. At home, when success first hit them, they were mildly delighted... (Dylan Thomas)
259. During the meat shortage in the summer of 1973, a flood of deer hunting applications hit the Springfield office... (Art Reid)
260. There is always a danger in a democracy when a wave of nationalist feeling hits the people. (Max Lerner)
261. My laughter hit them like cold water. (Howard Breslin)
262. In short, Schoenberg, both the man and the musician, had hit his opponents' feelings at a very profound level... (Donald Mitchell)
263. In the West, the influx of coal miners and construction workers and their families has already hit towns like Gillette, Rock Springs and Green River, Wyoming... (David Sheridan)
264. He saw the quick anger flash in her eyes and knew he'd hit a nerve. (Harold Robbins)
265. To Buchanan Rabbit says, "How much for the drinks? Now, they're just hitting me." (John Updike)
266. He could see her eyes brighten as the dope hit her. (Harold Robbins)
267. "Boy, they can rave when their pocketbook's hit." (John Updike)
268. Profit Taking Hits Market. (headline, VP)
269. Probably the hottest thing that has hit the Dallas investment community in years was the Martin Foods stock issue... (BC)
270. And mixed feelings are the way events like the Little Miss Virginia Pageant hit us. (Tony Stein)
271. ...I didn't know one damn thing about what I was saying, but I happened to hit the professor's fancy. (Elizabeth Spencer)
272. "Wait till some kind of reform Judaism hits this land," Cullinane forecast. (James A. Michener)
273. Occasionally one ["religious synthesizer"] will hit the popular imagination. (Wayne C. Booth)
274. Then he stopped as a sudden recollection of tradition hit him. (Isaac Asimov)
275. I was on a jet returning to New York when a thought hit me. (Alex Haley)
276. When Short brought them ["surveying instruments"] to Lincoln it hit him as another surprise in his young life. (Carl Sandburg)
277. ...it hit me what a comical scene it all really was... (Wendell Berry)
278. It was finally hitting home, the foolishness of it... (Michael Douglas)
279. "This hits home," he said. "People understand attempts to tamper with public opinion." (Bernstein & Woodward)
280. "The only time our juries hit physicians is when they've been negligent..." [said lawyer Thomas J. Harlan Jr.] (Anne Smith)
281. Kissinger hits Panel on Data Misuse. (headline, VP)
282. Schulze hits GOP tax plan. (headline, NO)
283. No prime minister in our history has been hit so hard by a biographer who knew him. (M)
284. In one wave after another, these people [=nuns] hit the Rhine and Danube frontiers, which crumpled. (Paul Johnson)
285. Horse thieves hit the place [Lafayette Farm in Lexington, Ky.] a week ago, making off with a 10-year-old mare in foal to Triple Crown winner Secretariat. (VP)
286. "You tell your brother he hits the bank my way or he doesn't hit it at all." (Steven C. Lawrence)
287. On August 16, Notaro's house was bombed, and by then Hale had drawn up a list of other locations to be hit... (Gay Talese)
288. The authorities took elaborate precautions to keep their organized crime witness from being hit in jail. (John Dean)
289. The first samurai he hit hired him. (Sterling Hayden)
290. Three weeks after that, they moved, blindly, after not even five months, and having to hit the last of their savings to do it... (Edward Hamblin)
291. hit the company education fund for a year in technical school. (43)
292. The vagrant hit me for a dime. (American Heritage Dictionary)
293. "...I'll hit the next trail-head boss for a job..." (Lane Grey)
294. Mcadoo confirmed that he had been fired by the club. Asked how much he had been hit for, he said, "I don't know." (AP)
295. They [=boats] were hitting it. (David L. Shores)
296. "Mike. Hit it." (TV show, The Streets of San Francisco)
297. "...those women are hitting it." (Kosary Eble)
298. "I started in prospecting, hit it rich right off..." (Max Brand)
299. "...Winkler finally hit it big in Hollywood. (Pamela Swift)
300. He [abroadjumper] hit it right on the money. (Keith Jackson)
301. "Only when I said that, she hit the roof." (Thomas Pynchon)
302. "I mean he didn't hit the ceiling or anything." (J. D. Salinger)
303. "You're too modest." "Al, you've hit the nail on the head." (Caldwell)
304. The leader of one factional clan in politics had been hit below the belt and had hit back -- below the belt. (Carl Sandburg)

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QUICK(LY), RAPID(LY), AND SWIFT(LY)

A Study of a Group of Synonyms

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1

The articles in most dictionaries of synonyms are unsystematic and essayistic. It is the aim of the present paper to present an alternative lexicographic method, based on somewhat stricter principles than what is the case for the dictionaries of synonyms which have been published thus far. In the Introduction we will quote the definitions and citations of the words quick(ly), rapid(ly), and swift(ly) in some of the dictionaries in current use today, and in the Conclusion we will present very tentatively a dictionary entry of these three synonyms. We hope that this entry will prove to be preferable in many respects to the entries in dictionaries available today.

1.1

Our entry will be based on the discussion which constitutes the main body of this paper. The material underlying this discussion is constituted by the results of an informant investigation undertaken in Great Britain in 1974 and sentences with our three synonyms in BC and W (see Bibliography for full titles of all abbreviations).

2

The following information is found in some of the most commonly used dictionaries:

W

FAST, RAPID, SWIFT, FLEET, QUICK, SPEEDY, HASTY, EXPEDITIOUS:
Fast and rapid are often interchangeable; fast often describes

moving objects or creatures and may suggest constant speedy course, flight, or procedure; rapid may refer to actions and their rate of speed and suggest successful course (a fast runner) (a fast horse) (a fast train) (a fast worker) (a rapid approach) (a rapid gait) (rapid operations). Swift may suggest speed or rapidity accompanied by easy facility, sure flight, brisk activity, or lack of interference and delay (flawless and chaste and swift in their machined perfection which even the airplane has never been able to rival) (so swift was Caesar that his greatest exploits were measured by days) (the flight of his imagination is very swift; the following of it often a breathless business) ... Quick applies to lively action with alacrity or to prompt occurrence with short duration (am a quick man with my hands and in a minute and a half I had done what I wanted to do) (a quick brain for intrigue) (in passing quick rather than deliberate judgement on the literature of the day).

WS

Fast, rapid, swift, fleet, quick, speedy, hasty, expeditious mean moving, proceeding, or acting with great celerity. Fast and rapid are often used without distinction, but fast frequently applies to the moving object and emphasizes the way in which it covers ground, whereas rapid is apt to characterize the movement itself and often to suggest its astonishing rate of speed (a fast horse) (a fast train) (a fast boat) (a rapid current) (a rapid gait) (rapid progress) (a fast worker) (rapid work). Swift suggests great rapidity, frequently coupled with ease or facility of movement (faster than arrows, bullets, wind, thought, swifter things) (more swift than swallow shears the liquid sky)... Quick applies especially to something that happens promptly or occupies but little time; suggests alacrity or celerity, especially in action, rather than velocity of movement (quick thinking saved him from the trap) (the drugs are quick. Thus with a kiss I die) (slow to resolve, but in performance quick).

KF

quick has preserved its root meaning of 'lively and active' (cognate with Latin vivus). It applies to energy of life as shown in swiftness of action or a ready response to impressions, or it refers to prompt occurrence with short duration (N quickness).

Be quick! As quick as lightning. To advance at a quick step. He is a boy of quick understanding. A quick answer. Quick returns of profit. A quick wit. He is quick to take offence. They arrived at a quick trot. He grasped the situation in one quick, shrewd glance. He was always quick to lose his temper. Lucy tamed her run to a quick walk. The sound is repeated, several shots being fired in quick succession.

swift (cognate with 'to sweep') applies commonly to speed accompanied by easy facility, brisk activity or lack of delay, (N swiftness) A swift runner, race, horse, ocean-liner. As swift as an arrow. He was tall and lean and a swift walker. The swallows swooped past, with a steel-blue sheen on their swift little bodies. Virgil says that

Camilla was so swift that she could run over a field of corn without bending a single blade. Time passes swiftly.

Rapid is generally stronger than quick and swift; it denotes great velocity, as that of a torrent tearing along everything in its course; hence acted or completed in a very short time. It may suggest successful course. A rapid gate. A rapid approach. Rapid operations. The rapid waters of a torrent. The affair came to a rapid conclusion. This tremendous walk she performed at a rapid rate. Byron was a rapid as well as a voluminous writer. The centre of the glacier, like that of a river, moves more rapidly than the sides.

QUICK fast precipitous rapid swift

CL

These words refer to speed of movement. While quick can apply widely, it often refers less to rate of motion than to the suddenness or brief duration of a single action: a quick leap; a quick response to my question; the eye is quicker than the hand. It can also apply to readiness to act: quick to take offence. When it indicates something of short duration it often implies haste: He ate a quick breakfast and rushed off to work.

Rapid and swift are both more formal than the preceding pair (quick and fast) and apply equally well to sudden or sustained movement: a rapid river, a rapid burst of machine-gun fire; a swift change of mood; a swift runner. Rapid has a special connotation relating to beneficial or advantageous speed; by contrast, both quick and fast can apply as well to catastrophic haste: a rapid recovery from illness; rapid progress in slum clearance. A special connotation of swift relates to speed that is smooth, undisturbing, uninterrupted, or seemingly effortless: a swift transition without hesitation or awkwardness: a communications network that was swift and silent in operation.

In my informant investigation, where 60 informants were asked to state the noun which immediately sprang to mind as an adjective was presented to them, quick as a cue word got the following responses:

quick: wits 5 action 4 march light 3 fire 2 answer 2 reaction 2
response 2 sands 2 step 2 temper 2 check drink ending
exit fox glance line rejoinder repartee reply thinking
tongue

Quick alone of the synonyms we are discussing can be constructed with an infinitive with the meaning 'ready', 'prompt'. Consider for example the following sentences:

- (1) ... which some in the west were so quick to assume when Mr Kruschew made this cynical answer. (BC)
- (2) ... this morning many dealers were quick to purchase shares... (BC)
- (3) ... and was quick to settle down. (BC)

The acts denoted by the infinitives are caused by circumstances having occurred previously. Thus, these acts are reactions to these circumstances. Quick can be moved to in front of the nominalization of the infinitive, quick assumption, purchase, settling down. It seems that quick does not refer to the short duration of time for these acts, but this word rather expresses the short duration of time elapsing from the Cause implicit in the circumstances having occurred previously to the initiating of the acts assume, purchase, and settle down. Compare (1), (2) and (3) with

(4) ... scraping an onion gave quick relief. (BC)

This can be transformed into "... scraping an onion was quick to give relief", where the sense is that the Cause initiated a reaction in a short time. Quick referring to the initiation of a reaction is reflected in the informants' responses to the cue word quick: an action is taken in view of circumstances occurring prior to the action being taken, the noun reaction itself has two occurrences. There are 7 instances of verbal reactions to what has been uttered previously, answer (2x), response (2x), reply, rejoinder, repartee. The connexion between what has been uttered previously and the present utterance is tighter in response and reply than in answer and even tighter in rejoinder and repartee. Furthermore, the duration of time between the Cause and the initiation of verbal reaction is shorter in those forms than in answer. In accordance with the syntactic behaviour of quick in (1), (2), (3), and (4), we can assume that the underlying structure of quick wits, action, reaction etc. is "Somebody is quick in his wits, action, reaction". By attaching quick to the Agent we introduce an element of 'deliberation', 'awareness'. This is important in a comparison between quick and swift, as we shall see below. Moreover, answer delivered deliberately a short time after what is answered may be called reply, response, rejoinder, or repartee. Thus, as quick in "somebody was quick in answering" is transposed to modify answer, this noun undergoes a transformation into a form which lexicalizes the quickness of the answer. Compare the following sentence:

(5) There was room to make a quick dash past the bush ... (BC)

Here, the element 'deliberation', 'awareness' is present in that an evaluation is made as to the possibility of moving quickly past the bush. Also, as quick in "quick in moving" is transposed to modify a deverbal noun, movement gets lexicalized into a form, dash, which has quickness inherent in it. The feature 'deliberation', 'awareness' is evident in

(6) his ... handclasp too consciously quick and firm (BC)

The 'reaction' implication of quick is evident in collocation with nouns designating evaluations where what is reacted to are the objects of the evaluations. Examples in BC are quick and accurate

diagnostic assessments, quick and accurate estimates, quick appraisal, quick computation, quick count and quick judgement. Compare also the following sentence:

- (7) Charlie spooned out some quick impressions of the Nikita he had glimpsed. (BC)

The 'reaction' sense of quick is also obvious in collocation with perceptions, whose semantic essence is reaction to sensory impressions: (from BC) "The prince's perceptions were quick and his energy monstrous"/"quick perceptions and sympathies". Compare also the following sentence where quick expresses the short time passing between the circumstances that are the Cause of the sensations panic and the appearance of this sensation:

- (8) I still had that kind of quick panic that I'd had as a child. (BC)

3.1

Quick and quickly are goal-oriented by referring to a quick action in order to achieve a desired goal. This goal-orienting function of quick manifests itself in collocation with way, which refers to a method to reach the desired goal:

- (9) ... then sanding away the top layer is a quick and economical way to produce a two-colour sign ... (BC)

- (10) Lewis decided to give a party as a quick way of rounding up his friends. (BC)

Compare in this connexion (10) and (11) with (12):

- (11) ... in the hexameter either poet could quickly and easily select words or phrases ... (BC)

- (12) be brought within the bounds of civilized usage quickly and easily ... (BC)

- (13) ... the planes moved swiftly and easily . (BC)

In (11) and (12) easily refers to little difficulty in selecting words/bringing within the bounds of civilized usage, signifying "it is easy", whereas in (13) easily is a description of the type of movement the planes were performing. Here, easily is a direct modifier of the verb, whereas in (11) and (12) easily has a superordinate status with regard to the verb, being part of independent predication, "it is easy".

3.2

Quickly has a superordinate status with regard to the verb it modifies due to it being attached to the Agent. This is grammatically manifested in preposition in reference to its modified verb. Quickly thereby gets a broader, or wider, function than it has in post-position (cf Bolinger 1962), Bolinger says that he is looking to a "broad-to-narrow sequence", and he illustrates this principle in "linear modification" by means of the examples, She sweetly

kissed him and She kissed him sweetly. The first sentence means 'She gave him a sweet kiss' and the second sentence means 'She gave him a kiss (that was) sweet'. The association with the Agent of the preposed adverb form sweetly appears clearly in the transform 'It was sweet of her to kiss him'.

- (14) I quickly cast through my mind to account for her being ... (BC)
- (15) I was aware that when our eyes met, we both quickly averted them. (BC)
- (16) The lioness quickly changed front when she saw she couldn't catch ... (BC)

The underlying constructions in these sentences are: 'I was quick in casting ...'/'We were quick in averting them'/'The lioness was quick in changing front'.

4

The following were the informants' responses with rapid as the cue word:

rapid: fire 4 progress 3 river 3 succession 3 growth 2 reply 2
results 2 speed 2 beat change decline deterioration flight
flow motion movement
mover pace promotion pulse reading shots strides water

Rapid has in its range nominal forms of the verb which has a central significance for the concept 'speed', move (motion, movement, mover). It is noteworthy that the noun speed also occurs there (two occurrences). The concept 'speed' concerns the relation between two entities, time and motion. Such a relation between two entities is expressed by the noun rate, which has three occurrences with rapid in BC, for example:

- (17) ... but to encourage a more rapid rate of industrialization...

Rapid modifies nouns denoting phenomena which can be subdivided into components. An example from the range of rapid is pulse. Pulse is naturally subdivided into each heartbeat making up the pulse, and rapid signifies a short time between each heartbeat. Fire (from a gun) is another example: The semantic function of rapid is to express that the time between each shot is short. As we can see in the range of rapid, shots can appear as the head too, i.e. each component in a continuous activity can be modified by rapid. Another example is somersaults in BC. Nouns expressing 'development' like growth, decline, and deterioration, which strongly dominate the range of rapid, may be called process nouns. W's definition of process fits in nicely with the analysis of rapid we have just made: "the action of moving forward progressively from one point to another on the way to completion". The following nouns in BC, modified by rapid, are typical process nouns: agglomeration or polymerization, amortization, change (two occurrences, rapidly + changing has six occurrences, three of which has the structure Adv + Adj + Noun, for example rapidly changing countries), decay, spoilage, fall off (in the radio brightness), growth (six

occurrences, rapidly growing has four occurrences; all have the structure Adv + Adj + Noun), increase, decrease, progress, quenching, rise, secretion, thaw.

The nouns reply and results in the range of rapid belong to the same category as shots and somersaults in that they constitute a point in a "process" where the "process" is the time elapsing from the Cause to the reply and results, or the "process" may be the utterance, each word of which is a point in the "process", and the plural concept results, rapid denoting a short time between each result.

4.1

A consequence of the "process" nature of rapid is the co-occurrence of rapidly with the continuous tense, which is impossible with quickly and swiftly. Examples from BC are: "America is rapidly becoming a nation that ..."/"Its tongue was working very rapidly"/ "His speed was dropping rapidly"/"which is not expanding rapidly".

4.2

Processes are more apt than other actions to occur in comparisons in which two entities are compared as to the speed at which a process is taking place. As a consequence of this, rapidly has in BC three occurrences with more---than, whereas swiftly and quickly do not occur at all in this frame:

(18) ... heat up more rapidly and also cool off more rapidly than do the mountainous regions.

(19) This increases very much more rapidly than the number of operations required.

(20) ... to diminish more rapidly than the semi-minor axis...

4.3

Yet another consequence of the "process" nature of rapid is the occurrence of rapidly + the modified verb after verbs of perception where the emphasis is on the ongoing process:

(21) ... saw the patrolman turn and walk rapidly down along the trailer ... (BC)

The particle down underscores the continuity sense of walk.

(22) ... and watched Elaine rapidly spin from one station to another. (BC)

4.4

Rapid has a more central position than quick and swift in the proposition in which it occurs in that the concept 'speed' is the informative core of the proposition so to speak. As a consequence of this, rapid + modified noun often occur after verbs which denote a favouring or disfavouring of the rapidity of a process. Consider for example:

(23) To insist on a level of performance in programing and budgeting completely beyond the capabilities of the recipient country would result in the frustration of the basic objective of our development assistance to encourage a more rapid growth. (BC)

We can transform the NP occurring after encourage into: a higher rapidity of growth.

Other similar examples are: "encourage a more rapid rate of industrialization", "he can control rapid execution", "not allowing rapid amortization" "prevented rapid changes", "unless he has aids to facilitate rapid composition", "steps to check the rapid growth of juvenile delinquency".

4.5

The process meaning often resides in the combination of subject and predicate rather than in the predicate verb itself in examples with rapidly:

- (24) The process of disruption rapidly reaches a point of no return. (BC)

The "process" is expressed by disruption and rapidly operates on this "process" word; only in the surface structure "does rapidly belong to the verb reach, which is called upon to express the irremediable nature of the disruptive process in that this verb form is a necessary specifier of the "destination" of the motion to "the point of no return". Similarly, in (25), rapid in the "deep structure" operates on the concept expressed by the verb appeared, whereas in the "surface structure" it modifies the noun tinge. Likewise, rapid in (26) operates in the "deep structure" on the concept expressed by the verb speak, while it modifies Arabic in the "surface structure":

- (25) A rapid tinge of blood appeared on his chest.
(Agatha Christie)

- (26) They spoke in rapid Arabic. (Agatha Christie)

Judging from reading experiences, rapid seems to be commonly used in front of specifiers of a language, particularly in such cases where the person or persons overhearing a conversation, for example, in a specific language, are not familiar with the language in question. In such a case rapid refers to a relation between a property of the activity expressed by for example speak and the overhearer's impressions of the nature of this activity; the words being uttered in the foreign language impinge on the overhearer's ears in a manner reminiscent of shots being delivered in rapid fire.

4.6

Quickly and rapidly have one occurrence each in front of an adjectival form:

- (27) ... and the company was quickly able to declare very liberal dividends. (BC)
- (28) ... bright sunlight is rapidly destructive for living microorganisms. (BC)

The underlying structure in (27) is not "the ability was quick" but rather "the company was quick to get able to ..." and in (28) the underlying semantic structure is "destruction in bright sunlight is rapid" rather than "the destructiveness of bright sunlight is rapid" because destructiveness does not have the process meaning that rapid requires.

4.7

The difference between quickly and rapidly appears clearly in two examples in collocation with shifts and shifting:

- (29) ...draws some justly deserved laughs by his quick shifts from one personality to another. (BC)
- (30) The substantial progress being made in ballistic missile technology is rapidly shifting the threat from manned bombers to missiles. (BC)

In (29) the underlying structure is "quick to shift". The impersonator's amazing alacrity is emphasized and the shift from one personality to another takes place in one stroke as it were. Conversely, in (30), the shift is a gradual process, the missiles gradually replacing manned bombers. The function of rapid is to designate the short time between each replacement. The same distinction between 'happening in one stroke' and 'happening by degrees' is reflected in rapid and quick modifying the noun succession:

- (31) I saw little Billy rise and fire almost point blank and an Indian's face became shattered flesh and bone. A second leaped from his horse to the top of the bale, firing four arrows in such rapid succession it didn't seem possible they were in flight. (BC)
- (32) His academic duties had little evident effect on his prolific pen. Bleinheim was followed in rapid succession by Ramillies and the Union with Scotland and by The Peace and the Protestant Succession, the three forming together a detailed picture of England under Queen Anne. (BC)
- (33) Two more shots followed in quick succession, dropping him limp and huddled on the ground. (BC)
- (34) At the age of 17 he became an apprentice machinist at the shop of Walcott & Harris in Valley Falls, Rhode Island, and following two or three other jobs in quick succession after graduation, he went into business for himself in 1831, making lathes and small tools. (BC)

The principal difference between rapid and quick in collocation with succession seems to be that quick succession is used when there are just two events following upon each other, whereas for rapid there must be more than two events following upon each other. This

distinction is in accordance with rapid referring to processes rather than to events taking place in one stroke as it were. It would seem to be justified to claim that rapid succession occurs in such contexts where the concept 'speed' has a dominant semantic position, the proposition with rapid having a central semantic function, whereas quick succession occurs in such contexts where the theme 'speed' adopts merely a parenthetical position. In keeping with this semantic function of rapid is the fact that rapid in (31) and (32) has a greater contextual significance than quick in (33) and (34). Rapid in (31) directs the focus on the dramatic violent activities being described in this example, and in (32) rapid serves to "back up" the assertion prolific pen in that this adjective calls attention to the three works mentioned. This central semantic role of rapid is in keeping with statements in dictionaries as to the abruptness and powerful force in the connotations of rapid. Such a conspicuous force is expressed in W's definition of rapid: "marked by a notably high rate of motion" (my italics UB). The "strength" of rapid in its expressing an extremely high speed is in especial evidence in (32), in which the speed is presented as being magic in nature. Quick would be unlikely here. Compare also the specification as to degree in (31) with occurrences with degree words of rapid (see 4.2 above).

5

The following were the informants' responses to swift as a cue word:

swift: flight 6 action 4 blow 3 movement 3 reply 3 bird 2 glance 2
half 2 arrow change conclusion deer finger justice kick pace
reprisal revenge runner running satisfaction speed stream
swallow

As a starting-point for our discussion of this range of head-nouns consider the following example:

- (35) He is the one responsible for my getting such low
M.R.s. Swiftly came the revulsion, the protest. No,
not he, for I and I alone, am responsible for whatever
happens to me. (UB)

Swiftly modifies the act of a mental phenomenon whose high speed is taken for granted. Hence there is an element of automaticity about swift. Flight and blow are deverbal nouns whose high speed is likewise a matter of course. Bird and swallow attach themselves to flight. We can also attach arrow to the same action noun. Glance and reply likewise denote phenomena with a high speed. Deer is an example of an animal which can move at a high speed. Run is a speedy motion. Just as in (35), where the reference is "reaction", abstract phenomena appear in the range (conclusion, justice, reprisal, revenge, satisfaction). The nouns justice, reprisal, revenge, and satisfaction have similar contrastive implications in that they contain the element 'compensation'. The function of swift to emphasize a contrast is also borne out by the following examples:

- (36) The false reasoning is that a gradual advance prolongs

the pain while a swift powerful act gets it over with and leaves the girl pleased with his virility ... (BC)

- (37) northerners sometimes bring a swift change from sunshine to howling blizzards (W)

The contrast is here probably too drastic for rapid to replace swift. (The attachment of rapid to change is closer than that of swift).

- (38) the plains end, and with a swift dramatic uprise the world of the mountains begins. (W)

- (39) better to be swift and casual than to be slow and thorough. (W)

- (40) must not search for penetrating or subtle characterization but rather for swift and arresting caricature. (W)

The element 'automatic, unencumbered motion' is apparent in the following examples in BC where mental phenomena are characterized: "swift survey"; "a swift suspicion darted into his mind"; "his mind turned the globe swiftly for him"; "the worry building swiftly inside him". The element 'automaticalness' appears most clearly in the following three sentences, in which verbs are given a characterization:

- (41) ... and rode their horses in swift manœuvres ... (BC)

- (42) With a swift swoop of his big arms he grabbed Sally ... (BC)

- (43) ...who caught him with a swift upward stroke of his rifle butt. (BC)

Compare the following example with quick where the noun characterizing the verb slipped, twist, represents a selected method of action requiring skill ("she knew how to move the noose in order to slip it off"):

- (44) ... and with a quick twist she slipped the noose off (BC)

It is obvious that there is a connection between the tendency of swift to modify nouns which are intrinsically swift, like flight and blow, and the semantic feature 'automaticalness', which we have claimed to be inherent in swift.

5.1

We find that quick, rapid, and swift all have reply in their ranges. In accordance with our analysis of the three adjectives, the three collocations have different meanings: quick reply suggests "be quick-witted in answering", rapid reply suggests "each word comes tumbling out of the mouth in answering", whereas swift reply suggests "the answer is released as it were automatically because the addressed person is emotionally aroused by a rather strong provocation".

It would seem to be justified to claim that the main semantic function of swift is to mark a contrast rather than to attach the property

'high speed' to a happening or an event. It might even be claimed that the original association between swift and a verb in OE signifying 'sweep' is retained. We may even go so far as to assert that the referential meaning of swift is merely to mark a strong contrast, attaching the feature 'dramatic change' to an act or an event, (see example (38)) whereas 'high speed' is an inferential meaning, the inference 'having a high speed' being based on the Language users' pragmatic knowledge of the world around them. According to this interpretation, swift is underdetermined (Ruhl's term), i.e. language users ascribe more meaning to a linguistic form than this form warrants. This semantic "overloading" (Bolinger's term (1971)) is based on the language users' pragmatic knowledge concerning accompanying phenomena. Thus, for example the reader of sentence (42) can infer from grab and swoop that 'high speed' is an accompanying phenomenon in relation to the semantic core of these verbs. The function of swift is here mainly to mark a conspicuous contrast between the dramatic activity expressed by these two verbs and the preceding 'non-activity'.

6

Consider the following example:

- (45) But the Latin American republics who have been rather inclined to drag their feet on taking action against Castro also reacted swiftly last week by finally throwing Cuba off the Inter-American Defense Board. For years the United States had been trying to get these countries to exclude Castro's representative from secret military talks. But it took the pictures of the Migs and the T-34 tanks to do the job. (BC)

React and reaction are apt, as we have seen, to collocate with quick and quickly. But, as we pointed out above, quick is closely associated with deliberation or a disposition to act or react. In (45), however, the releaser of the reaction is so strong as to call forth the response to it as it were automatically, i.e. there was no room for deliberate planning. The Agent is, as it were, swept away by his emotions (the adjective swift originates in an OE verb meaning 'sweep' (see above)). The strength of the Cause of the Effect (reaction) is also underscored by the Latin American republics' earlier resistance to US pressures to exclude Cuba from secret military talks. It is possible to paraphrase (45) like this: the Latin-American republics took swift revenge. Revenge and reprisal both occur in the range of swift in my informant investigation.

6.1

Let us now consider two minimal pairs, one with quickly and swiftly, and the other one with rapidly and swiftly.

- (46) He tried the doors of the book-case. The titles he could read easily through the criss-crossed wires: works on theology, astral physics, history, biology, political science. No poetry. No novels. He moved over to the desk and stood looking at the papers on it but not

touching anything. The clock on the mantelpiece was scandalized and ticked so loudly that he glanced at it over his shoulder and then quickly left the room.
(BC)

A short introduction to sentence (47) is necessary: Dolores and her husband, a newly-wed couple, were fighting over a pair of shorts which the young man had simply dropped on the floor for his wife to pick up and wash. This was flatly refused by Dolores. The husband had then placed his wife's pants beside the shorts on the floor. His plan was that she would have to pick up his shorts as she picked up her own underwear.

- (47) In a surprisingly short time, Dolores appeared. To his delight, her eyes focused at once upon the two garments. Slowly and deliberately, she reached down and touched the lace with her fingers, then hesitated for a second. Ah, he thought, she's going through the chain of reasoning which says she might really just as well pick up his shorts too. He saw that in a moment she had grasped all the implications of a plot that had been weeks in occurring to him. Extending her fingers another inch, she caught up the shorts, and swiftly left the room. She did not look at him, but he noticed that her face was flushed and her eyes unsteady. (BC)

In (45) there is a readiness in the Agent to react quickly in case there are indications of a danger being caught snooping. Thus, quick has here a superordinate status with regard to the verb leave. QUICK is so to speak attached to the Agent all the time he is prying about: if a danger of being caught should arise, he would be quick to get away. In passing, we may call attention to the fact that quick get-away is a very tight collocation. In my informant test, get-away as a cue word got 100 % quick responses. There is an element of alert readiness to escape in this collocation similar to the one in example (45). In (46), on the other hand, the Act, "leave the room", presents itself as the course of action necessitated by suddenly arising circumstances. There is no element of readiness or planning. The suddenly arising circumstances have such a strong emotional force that the Agent is left with no choice: she is swept or carried away by her emotions. In quickly leave there is a greater distance between modifier and head, due to the attachment of quickly to the Agent, whereas in swiftly leave there is a tighter relation between the two components of the VP in that swiftly has a direct bearing on the verb itself. The Agent is as it were helpless and may even be regarded as the object of the verb: the swift leaving of the room carried/swept her out of the room. There is an automaticity about swift in that the act is carried out without readiness or deliberation on the part of the Agent.

- (48) ... the status of the congregation in a rapidly changing society. (BC)

- (49) ... able to adjust his creative personality to a swiftly changing world. (BC)

Rapidly focuses on the speed of a process and has a higher informative value and a lower context dependence than swiftly. Rapidly in (48) constitutes the cause for certain properties of "the status of the congregation". Thus, rapidly is informatively central in that it functions as a sort of implicit predication of the NP preceding the prepositional phrase "in + head". On the other hand, swiftly modifying the verb in the construction "process verb (functioning as adjective) + Noun" demands a balancing verb, adjust, with the sense 'try to come to terms with'. This sense implies confrontation with a difficulty, which is constituted by the speed of change. Swiftly, with its note of 'automatic sweeping/carrying away', attaches a feature of 'threat' to this difficulty. Hence swiftly has a high degree of contextual dependence in that it balances a verb which presupposes difficulty.

Consider two other examples supporting this analysis:

- (50) ... the capacity to cope with the demands of a swiftly evolving economics. (BC)
- (51) Our security is greatly complicated by the swift pace of scientific progress. (BC)

But rapid is used in the same collocation when there is no verb indicating difficulty present:

- (52) ... the fight proceeded at a rapid pace. (BC)

Cope with in (50) has the same "balancing" function as adjust in (49).

6.2 The difference between quick and swift also comes out in collocation with glance:

- (53) She was a living doll and no mistake - the blue-black bang, the wide cheekbones, olive-flushed, that betrayed the Cherokee strain in her Midwestern lineage, and the mouth whose only fault, in the novelist's carping phrase, was that the lower lip was a trifle too voluptuous. From what I was able to gauge in a swift, greedy glance, the figure inside the coral-colored bouclédress was stupefying. (BC)

Here the eyes are automatically attracted to the beautiful girl. There was no resisting looking at her.

- (54) This evening, they were pushed in from the breakfast room, with odds and ends of dessert distributed over them. There had been some coconut in it for I remember my mother's

taking a quick glance at a stringy bit of this nut on the cheek of one of them and them putting down her radish with a shiver. (BC)

Here there is an element of intention present in that the quick glance is part of the mother's examination of the children's appearances.

- (55) He gave Abel a quick glance and moved closer to the wheel ... (BC)

The aim of the quick glance here is to appraise Abel's reaction to what had just been said. Quick also collocates with nouns denoting 'appraisal', as we have seen. It is likely that quick is apt to occur in the frame "give/take a glance at ...", as these verbs indicate intention, whereas swift glance probably occurs primarily in prepositional phrases as in (53).

Compare also the following examples with the verb say:

- (56) Fierce anger surged through Russ. He fought down an impulse to rush in and collar the vicious puncher on the spot. Reaching the porch rail beyond the view of the bar windows, he feverishly scanned the street below. Stevens was nowhere in sight. Muffling an exclamation, Russ sprang to the nearest steps and ran down. As luck had it, he had not gone twenty feet in the street before Pat appeared. "What luck, Cobb?" he said swiftly. (BC)

This text has ample evidence of the excited atmosphere which prevails in the scene described. Pat is obviously carried away by the same emotions which are gripping Cobb.

- (57) Phil followed Eddie into the office and shut the door. --- "I'm doing you a favour", Eddie said quickly. "You get your unconditional release as of today". (BC)

What Eddie said had been planned.

The following two examples manifest the emotive character of swift very clearly:

- (58) ... as she hurried fearfully down the stairs. --- As Kate came swiftly down the stairs to the hall ... (BC)

The same person is referred to in both sentences. Hence, 'fearful' is a component of "came down the stairs".

- (59) But, kindled by his kiss, his caressing hand, her desire was aflame. She sprang up and went swiftly to the bedroom. (BC)

7

CONCLUSION

Only quick and swift can occur in the construction "be quick/swift in doing something". This is related with quick and swift referring to an activity which occurs so to speak in one block, whereas rapid, as we have seen, operates on "process" words such that this adjective signifies the short duration of time elapsing between each stage in a "process" concept. It is also related with quick and swift occurring with action. This collocation illustrates the character of "happening in one block" of quick and swift in that action is the denotation of a single continuous whole, not allowing a subdivision into many components, which, as we said above, is a common characteristic of the nouns that are modified by rapid. This in turn is related with quick and swift modifying nouns with redundancy features, i.e. nouns which include in them the element of high speed, like dash and twist (quick), swoop and stroke (swift). We note in this context the interesting fact that quick and swift have a fair number of nouns with redundancy features in their ranges, like glance, rejoinder and repartee for quick, and glance, flight and run for swift. Rapid has in its range only two noun responses with such redundancy features, flight and flow. The possibility for quick and swift to occur in the construction "be quick/swift in doing something" is, it would seem, the crucial factor for co-occurrence with nouns which copy semantic features of their modifying adjectives. Compare the two sentences:

(61) The lion tore up the deer in ravenous hunger.
(concocted example)

(62) He tore his hair in raving madness. (concocted example)

In those two examples hunger copies a feature of ravenous and madness copies a feature of raving. Now, it is argued in Bäcklund 1978, ravenous in (60) and (61) have been transposed from the position of the Act, i.e. there are underlying the "surface structures" in (60) and (61) "deep structures" like "the lion was ravenous and tore up the deer in hunger" and "he was raving and tore his hair in madness". Sentences (42) and (44) might be given similar "deep structures". "was swift and grabbed Sally in his swoop" and "was quick and slipped the noose off in her twist". where swoop and twist copy features of swift and quick. Thus, there is obviously a relation between such a transposability and a tendency to modify nouns with redundancy features.

8

Els Oksaar (p 30) warns against a circular reasoning which one might be caught up in when one considers the interdependence between words. She cites the sentence Jeder liegt schnell zwischen vier engen Brettern, saying that the connection between Verb and Adverb can be constructed in two different ways:

- 1) Wird schnell als Bezeichnung des Tempos, als Antonym zu langsam so erscheint die Aktionsart des Verbs als nichtdurativ - - liegt hebt das Resultat von sich legen hervor. 2) Fasst man liegt als ein Zustandsverb, so bedeutet dies, dass schnell, obwohl das Verb usuell durativ ist, nich das durative Geschehen, sondern den Zeitabstand bis zum Liegen bezeichnet.

She draws the following conclusion from this circular explanation: "Wichtig ist jedoch die Feststellung, dass die Aktionsart des Verbs nicht als methodischer Ausgangspunkt der Inhaltsbestimmung der Schnelligkeitswörter gelten kann". She asserts that Stern has considered this insufficiently when he says (p 24):

The meaning of an adverb denoting speed is partly dependent on the mode of action (Aktionsart) of the governing verb. NES s.v. quickly, distinguishes the following three shades of meaning: '1) Describing the rate of progress in motion, action or process, without consideration of the time at which it begins and ends. 2) Denoting that the whole action or process is begun and ended within a comparatively short time. 3) Denoting that there is little or no interval between a given point in time and the doing of an act or happening of an event (freq. also implying 1 or 2) 'without delay, very soon, shortly'. Sense 1 occurs in connexion with perceptive verbs, and sense 3 also with perceptive verbs when the action is regarded as commencing shortly after a given point in time, expressed or implied.

In adverbs where all three senses occur, it seems to be the rule that 1) is the earliest sense, and that 2) and 3) arise out of it.

Stern is primarily concerned with the development of senses of swift, swiftly, and their synonyms and the claim that the sense 'immediately' has originated in and developed from the sense 'rapidly' is the central issue of his work. Now, in the English version of Oksaar's sentence, I feel that only quickly is acceptable: "Each of them quickly(?rapidly swiftly) lies between four narrow boards". We have claimed above that the essential meaning of quick(ly) is to denote that a comparatively short time elapses between the cause of an act and the initiation of this act. We also made the claim that this meaning has the implication that quick(ly) attaches itself to the Agent, "each of them was quick to lie (down)", thereby signifying an alertness to act or react in the Agent. In English the circular reasoning which is involved in claiming that the adverb is for its interpretation dependent on the character of the verb, and that the verb is for its interpretation dependent on the nature of the adverb, can be avoided if we apply the analysis which has been suggested here: quick(ly) denotes a ready alertness in the Agent to react, i.e. quick points back "to the left" in the construction NP VP in cases where the Agent is + animate. Oksaar's

two interpretations of "liegt schnell" are obviously based on the speaker's and listener's pragmatic knowledge that a connection between the durative verb lie and the adverb expressing the first "shade of meaning" in the definitions in NED is unacceptable. Our claim here is that a lexical item has an integrity which cannot be lost in any of its occurrences. This implies that sense 3 in NED's definition of quickly is valid in all occurrences of quickly, if this sense is interpreted such that it implies a ready alertness in the Agent to react. This automatically rules out sense 1 in NED's definition, because this sense is inapplicable here due to the nature of the verb lie. This sense is, as is stated in NED, frequently, but not always implied by sense 3, which, as we claim here, is the semantic core of quick(ly). If one embraces the view that a lexical item has semantic integrity, one is apt to take a monosemic position rather than a polysemic one. Furthermore, such a view causes the analyst to require a large amount of data for his analyses because the complete paradigmatic pattern determines the nature of the semantic integrity of a lexical item. It is patently the case in many modern linguistic writings that the meaning of words is assigned to a lexical form on the basis of just a few syntagmatic patterns rather than on the basis of the entire paradigmatic pattern. See Charles Ruhl for discussions of this problem. Compare also Bäcklund 1978 (forthcoming).

9

There is a gradience as to aptness to refer "to the left" among our three synonyms in that quick has a "complete" reference of this kind (quick makes this reference obligatorily) and swift can have such a reference, as is indicated by the "transformation" "be swift in action" "swift action". Compare also:

(62) ... swift in affection, and swifter still
for vengeance. (W)

Rapid, finally, is incapable of referring "to the left". This is linked with the fact that the nouns in the range of rapid are not marked by semantic redundancy.

The difference between our three synonyms as to this property of "referring to the left" is manifested in the following semantic and syntactic traits:

- 1) Quickly occurs principally in preposition with regard to the modified verb, whereas this tendency in the case of swiftly and rapidly is not so pronounced as it is for quickly, judging from BC.
- 2) Co-occurrence of quickly with easily in such cases where this adverb has a superordinate status, referring back to the Agent, as in examples (10) and (11), "it is easy for either poet to select words quickly", but co-occurrence of swiftly with easily in such a case where this adverb modifies the verb move in a direct manner (example (12)).
- 3) Occurrence of rapidly in syntactic constructions that indicate a higher informative value for rapid than for swift and quick:
a) occurrence in the frame more ... than (4.2); b) co-occurrence of rapidly with continuous verb forms (4.1).

These traits are indications of rapidly "referring to the right" in that a proposition concerning high speed receives a particular emphasis. Another manifestation of this is the fact that rapidly can occur in the construction Adv. Adj. N., for example in "a rapidly growing demand" and "rapidly changing societies." Swiftly occurs in this construction in two cases in BC, examples (49) and (50). In both these examples, however, the greater semantic weight is carried by an element indicating 'difficulty to come to terms with'. Compare also example (51): Swiftly in "swiftly evolving economics" and "a swiftly changing world" is used parenthetically, as it were, the notion high speed being interpreted almost as given information, i.e. the high speed is in these examples taken as a matter of course. This may be related with the fact that swift modifies nouns expressing phenomena that have intrinsically high speed, like flight, revenge and satisfaction. Compare also the occurrence of swift in examples containing an element of contrastiveness for example in sentence (38), where swift appears to function primarily as a redundant emphazier of the concept expressed by dramatic. Swift seems here to have a meaning which is associated with its semantic relation with the verb sweep rather than express high speed. Compare also examples (42) and (43), where swift serves to emphatically "bring home" the concept 'high speed' that is an intrinsic property of the verbs that are characterized, grabbed (with a swift swoop) and caught (with a swift stroke).

4) We have said in 3.1 that quick(ly) is goal-oriented and that this is related with the tendency of quick(ly) to refer "to the left", attaching itself to the Agent. This peculiarity is displayed by the adverb quickly in the context "as ... as he/we could" (3 x in BC) and "as ... as possible" (2 x in BC), for example:

(63) He climbed as quickly as he could urge his body... (BC)

"As he could" here is an indication of an alert readiness in the Agent to act quickly. (Compare, however, example (64) which seems to be a counter-example).

Another manifestation of the goal-orientedness of quick(ly) is its co-occurrence with enough (2 x in BC):

(64) He moved quickly enough when he had to. (BC)

(65) ... and he backed off as rapidly as he could, stumbling over his own feet in his frantic haste to get away from Curt's fists. (BC)

Stumbling here is an indication of rapidly referring "to the right" in that this verb form directs the reader's attention to the exact way in which the act "back off" was performed, stumbling being even a consequence of the act being performed at a high speed.

10

Having concluded the discussion, we are now ready to present an alternative entry in a dictionary of synonyms. Before we begin this, however, we must once again stress the tentativeness of

this entry. The data constituting the material for the discussion in this paper are naturally too scant. We have merely indicated a few questions concerning the distinctions in meaning between our three synonyms. The lexicographer would have to follow up these questions by formulating hypotheses which must be carefully tested in a battery of informant tests. As an example of a question which would require further investigations, we can mention here the assumed difference in collocation of quick and swift with glance which is discussed in 4.7 (quick glance was supposed to occur in the frame "give/take a --- glance", in accordance with the association of quick with the Agent's intention, whereas swift was assumed to occur in the prepositional phrase "in a --- glance"). Another question which would have to be tested is the difference in contextual implications between rapidly and swiftly in collocation with "process" verbs functioning as adjectives in the construction "Adv. + Adj. + N.", which is indicated in examples (48), (49), (50), and (51). The following would be our tentative dictionary entry:

11

Quick(ly), Rapid(ly), and Swift(ly)

These adjectives and adverbs signify 'high speed'. The basic difference between the synonyms is illustrated in the following two sentences:

It required both a quick and a swift Hoss ... (BC)

The work proceeded at a rapid rate.

Only quick and swift can co-occur with nouns designating human beings, and only these two adjectives can occur in the construction "be --- in doing something". Quick appears most naturally in this construction. Quick in the above sentence refers to an alert readiness in the Agent to react to circumstances having occurred previously. Quick thereby is associated with 'deliberation', 'intention', and 'awareness'. Swift in the sentence above refers to 'evinced high speed in the performance of an action'. Thus, swift is more directly associated with motion, an event, or an act proceeding at a high speed than quick. Rapid is different from swift and quick in its focusing on speed, i.e. the proposition which indicates high speed has greater informative weight in the case of rapid than in the case of quick and swift. Rapid is more centred on the concept 'speed' than quick and swift. Thus, only rapid can co-occur with rate. This noun designates a relation between time and space, i.e. if a motion covers 3 metres in 3 seconds, the rate of the motion is 3 metres in 3 seconds. Rate subdivides the distance covered by motion into a series of portions, 3 metres in length. Rapid operated on rate such that the time is decreased: If 3 metres per 2 seconds is a normal speed, a rapid speed decreases the time to, say, 1 second.

1. The results of the informant investigation concerning quick,

rapid, and swift are presented.

2. The element 'deliberation', 'alert readiness' in quick manifests itself in:

a) collocation with reaction

b) collocation with nouns expressing 'verbal reaction', answer, response, reply, rejoinder, repartee. The nouns modified tend to include in themselves the concept 'high speed', as for example rejoinder and repartee so that an element of redundancy arises. Compare also:

Sentence (5) is given.

c) collocation with nouns denoting 'mental reaction': wits, temper. Quick here refers to the shortness of the time elapsing between the Cause of a reaction and the appearance of a reaction in wits and temper.

d) occurrence in the construction " --- to do something"

Sentence (1) and (2) are given.

e) occurrence in contexts which indicate 'intention'

Sentence (9) is given.

I had a quick breakfast/lunch/drink.

The duration of breakfast, for example, is related with the Agent's intention. Occurrence in the frames "as --- as I/you etc. could", "as --- as possible", and in front of enough.

Sentence (63) and (64) are given.

f) Quickly appearing in preposition in relation to its modified verb. Such a preposition is related with an attachment to the Agent, as in "She sweetly kissed him" (= 'it was sweet of her to kiss him'), whereas "She kissed him sweetly" means 'gave him a kiss that was sweet':

Sentence (16) is given.

... couldn't quickly unwire the truck door. (BC)

Note the emphasis on capacity in the Agent here.

g) co-occurrence with accurate and accurately ('accuracy' is usually intentional)

quick and accurate diagnostic assessments. (BC)

quick and accurate estimates. (BC)

work quickly and accurately. (BC)

h) collocation with nouns denoting 'mental reaction' (compare c)

above): appraisal, estimate, assessment, perceptions.

i) occurrence in a sentence where there is focus on 'awareness'

Sentence (6) is given.

j) co-occurrence with easily in such a sense that it has a super-ordinate status, referring to 'little difficulty for the Agent'.

Sentence(11) and (12) are given.

k) collocation with glance in the frame "take/give a --- glance". Swift, on the other hand is likely to occur in the frame "in a --- glance".

Sentences (53) and (54) are given.

3. The collocation quick action emphasizes the short time elapsing from the circumstances causing the action in question to the initiation of the action, whereas swift action emphasizes that the action in itself proceeds at a high speed. In accordance with this function, swift collocates with nouns with high speed as an inalienable property. Most of these nouns have thus an element of redundancy: flight, blow, reply (answer is not likely to co-occur with swift), glance, arrow. Notice particularly nouns denoting living creatures such as bird, swallow, deer, horse. The nouns modified by swift are often characterized by a capacity for 'unencumbered', 'smooth' motion; compare also swift ship (swift sailing occurs in BC).

4. Swift co-occurs with easily where this adverb characterizes the way of moving. (Compare 2) j) above)

Sentence (13) is given.

5. Swiftly co-occurs with react, just like quickly, but reacted swiftly attaches the property to the reaction in itself, whereas quick reaction emphasizes the short time elapsing from circumstances causing the action to the reaction in itself. The action or reaction modified by swift is characterized by a high degree of emotional tension. The Agent is as it were swept away by strong emotions.

Sentences (45), (46) and (47) are given.

Quickly leave focusses on an alert readiness in the Agent, in accordance with the feature 'deliberation', which is inherent in quick. Swiftly leave, on the other hand, indicates 'carried away with emotion', implying an emotion so strong that it is impossible to resist.

6. Swift co-occurs with nouns for phenomena which are closely associated with a strong desire (compare the feature 'emotional tension' referred to above):

revenge, reprisal, satisfaction. Compare also justice. These nouns are also marked by contrastiveness in that they have the implication 'compensation'. Contrastiveness is a common contextual feature in the case of swift(ly) Sentences (36), (37), (38), (39) and (40) are given.

7. Swift collocates with deverbal nouns specifying the nature of a verb. This is in accordance with swift collocating with nouns which have an inalienable property 'high speed' in that swoop and stroke are marked by the feature 'high speed'.

Sentences (41), (42) and (43) are given.

Quick twist is different from swift swoop/stroke in that twist, in accordance with the element 'deliberation' in quick, applies to technical skill ('she knew how to slip off the noose'),

8. Rapid collocates with "process nouns, most of them being deverbal.

Such nouns have a certain extension of time, for example growth, progress, deterioration. Because of this extension, such a noun may be divided into components, for example pulse, which is naturally subdivided into heart-beats.

Rapid operates on pulse such that the time elapsing between each heart-beat is decreased. Rapid and quick collocate with fire and succession. Rapid thereby applies to fire (from a gun) when more than two shots are fired, which is in accordance with rapid operating on innumerable sub-components of phenomenon (like pulse). Quick, on the other hand, in accordance with it operating on the "reaction" time between the Cause of the action and the initiation of an action, is more likely to refer to only two shots. Similarly, in collocation with succession, rapid occurs when succession refers to the following of one upon another of more than two events whereas quick occurs when only one single event follows upon another event.

Sentences (31), (32), (33) and (34) are given.

8. Examples of "process" nouns in collocation with rapid are: growth (six occurrences in BC; rapidly + growing has four occurrences), change (two occurrences in BC; rapidly + changing has six occurrences) decay, decline, deterioration, increase, decrease, flight, flow, fall off (in the radio brightness), progress, promotion, quenching, reading, rise, secretion thaw.

9. The following are manifestations of the proposition denoting high speed in the base of rapid having greater informative weight than in the case of quick and swift.

a) Co-occurrence with the continuous sense (impossible with quick and swift)

America is rapidly becoming a nation that ...

Its tongue was working very rapidly.

His speed was dropping rapidly.

b) Occurrence of rapidly in the frame "more---than"

Sentence (17) is given.

c) Occurrence of rapidly + the modified verb after verbs of perception where the emphasis is on the ongoing process.

Sentence (21) is given.

d) Occurrence of rapid with verbs expressing a favouring or dis-favouring of rapidity.

encourage a more rapid rate of industrialization

not allowing rapid amortization

prevented rapid changes

facilitate rapid composition

10. Rapidly has seven occurrences altogether in BC with growing and changing in the construction Adv + Adj + N. Swiftly can occur in such a construction, if there is in the context a "balancing" verb indicating 'difficulty to come to terms with'.

Sentences (48), (49), and (50) are given.

This entry will probably have to be shortened considerably when it comes to inserting this into an actual dictionary, but our tentative entry will give the reader an impression of what characterizes this lexicographic method.

Footnotes

- 1) The two occurrences of accurate with quick seem to indicate a tendency towards co-occurrence of these two words. This is support for our contention that the feature 'deliberate' adheres to quick: what one does at great speed, one tries to do with accuracy as well.
- 2) In his paper "Linear Modification".
- 3) In preparation.

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LEXICAL INTEGRITY: GOOD, GREAT, AND WELL

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In his response to Postal's (1970) analysis of remind Bolinger (1971) suggests that we respect the INTEGRITY of a lexical item by trying to generalize its senses rather than making it polysemic. He demonstrates that part of the SEMANTIC meaning that Postal attributed to remind is actually PRAGMATIC, supplied by inference. In this paper I will show a parallel case with the words good, great, and well.

Linguists like Katz (1966) and Ziff (1960) have attempted to find a general 'value' sense for good, but neither attempted to account for 'amount' senses; the two senses are exemplified in the following:

1. This is a good knife. (Value)
2. We walked a good two miles. (Amount)

I will show that these two senses can be generalized by comparing good to two words related semantically to it, great and well. These two words also have 'value' and 'amount' senses:

3. This is a great steak. (Value)
4. There's a great deal of truth in that. (Amount)
5. He took the news well. (Value)
6. They advanced the troops well into enemy territory. (Amount)

Someone who made these three words polysemic would fail to account for the fact that they are polysemic in a parallel way. I will argue that these three words are in fact monosemic.

My method will be similar to Katz'. In the phrase good knife, good seems to have the sense 'ease of cutting'; Katz argues (p. 300) that this specific sense is not a part of good, but is instead supplied by a feature from knife. Specific senses can be accounted for in this way, and thus good can be given only one general meaning. I will show that Katz' solution does not always work because it attempts to supply the specific sense by SEMANTIC means. But the claim can be upheld if the specific senses are supplied PRAGMATICALLY.

We can begin by noting that good predicates a positive evaluation. The base value fair represents the standard or point of adequacy on which any evaluation depends. The minus or negative state is represented by bad and the plus or positive state by good. The basic value, fair, can not ordinarily be intensified (in this sense): *extremely fair, *very fair, *quite fair, *not

so fair. Good and bad can be intensified: extremely good/bad, very good/bad, quite good/bad, not so good/bad. Intensifying is a very productive process. Some of the more recent combinations with good have come to us by way of Madison Avenue and Colonel Saunders, 'a country good meal'; 'finger-lickin good'; and 'some kinda good'.

Other evidence that establishes good as a positive value state is provided by the comparatives better and worse. Both of these comparatives range over the scale of value states, so it is important to keep in mind that better does not indicate a higher degree of the quality in question than either the base value state or the positive value state. We can compare two things of bad quality yet decide that one is of better quality than the other. When we evaluate something as good, we are predicating its value state; when we use better/best and worse/worst, we are comparing things of which we have already predicated the value state.

7. Both of these apples are bad, but this one is better than that one.

We can paraphrase good as 'more than sufficient for a specific requirement' and this will roughly account for its use in the evaluation of both quality and quantity nouns, as follows:

8. That is a good knife. — 'That is a knife that is more than sufficient for a specific requirement'.
9. I had a good sleep. — 'I had a sleep that was more than sufficient for a specific requirement'.
10. This piece of furniture is of good design. — 'This piece of furniture is of a design that is more than sufficient for a specific requirement'.
11. We've come up with a good number of topics courses. — 'We've come up with a number of topics courses that is more than sufficient for a specific requirement'.
12. David walked a good two miles. — 'David walked a distance that is more than sufficient for the measurement of two miles'.
13. He played a good hour on the cello. — 'He played for a time that is more than sufficient for the measurement of an hour'.

Recent treatments of good have centered only on the quality sense, but even there they suffer from compositional bias. In trying to deal with the derived meaning of a good construction by assuming that its meaning is only the sum of its parts, linguists have either gone to the extreme exhibited in dictionaries where the burden of meaning is placed on good with the conclusion that there is an enormous number of goods in the language, or they, in trying to generalize the meaning of good, have placed the semantic burden on the noun, expecting it to carry its own meaning and that of good in addition. Jerrold Katz has taken this latter course.

He suggests that the meaning of good cannot stand alone as a complete concept; it is a function that operates on other mean-

ings and is thus syncategorematic. He further argues that nouns in the language are divided into two exclusive categories, those such as knife which can be evaluated for Use, Purpose, Function, or Duty and those such as liquid or integer which cannot. Nouns in the former category carry an evaluation semantic marker that specifies the Duty, Function, etc. of the noun. For example, the word knife carries the evaluation semantic marker that indicates that a knife is evaluated in terms of its use. The phrase good knife thus means 'positive for ease of cutting'. He admits that his analysis does not work for examples such as That John came is good and good man where no single normative function can be assigned to the head noun.

Katz is right in concluding that there are certain nouns that are ordinarily thought of in connection with their purposes or functions. Books are to be read; songs, to be sung; knives, to cut with. But Katz' analysis raises more questions than it answers even with his principle example, good knife. According to his analysis This is a good knife means 'This is a knife that is positive for ease of cutting substances softer than its blade'. If we follow this analysis, what would be the derived meaning of good putty knife, good butter knife, good palette knife, knives that use the breadth of the blade rather than its edge? Does knife continue to carry an evaluation semantic marker for its use that can be interpreted as 'ease of cutting substances softer than its blade' or does the additional modifier, putty, cause the normative use of knife to change since the normative use of a putty knife is not cutting, but smoothing and scraping? How is the use of intensifiers accounted for? If good triggers plus and bad triggers minus in the evaluation semantic marker, what happens with very good knife? If we assume that the normative function or purpose of a noun is a part of its basic meaning no matter what it is being evaluated for and if we also assume that good has meaning independent of the noun it modifies, then the analysis becomes much less complicated. Thus the derived meaning of the proposition This is a knife is 'This object is an instrument consisting of a handle and a blade that usually has a sharp edge for cutting'. This is a GOOD knife then means 'This instrument consisting of a handle and a blade that usually has a sharp edge for cutting is more than sufficient for a specific requirement'. Note that the specific requirement is not stated; thus, the construction says that the knife is more than adequate, nothing more. When an additional modifier such as putty occurs in the construction, it names the specific requirement and its meaning combines with the meaning of good and that of the head noun to produce a derived meaning such as 'This instrument consisting of a handle and a blade that usually has a sharp edge for cutting is more than sufficient for the specific requirement of spreading putty'. Additional specific information is supplied pragmatically.

In the composition of a construction including good, the head noun and any modifiers other than good, each word provides a significant share of the derived meaning of the construction. Good provides the information that what is being evaluated is a

state above adequate or standard. The point of adequacy for evaluating any given noun varies from individual to individual. This helps explain why Katz' system breaks down with the phrase good woman, a good man, and a good painting. These nouns can only be evaluated according to an individual's criteria for determining a standard or a point of adequacy. The statement That painting is good may indicate a serious evaluation of technique, or it may simply reflect an individual's affinity for certain color tones. In addition, speakers imply and listeners infer specific meaning that does not occur in the lexical items, drawing extra information from the extralinguistic context. The doctor who says that a burn looks good means that it will heal well, and the lawyer who says a certain young woman will make a good-looking witness is not referring to her physical attributes, but to her testimony. Joe Garagiola recently commented on NBC Baseball that a certain pitcher made a good pitch. The ball did not go over the strike zone and would not have been called a strike. Unfortunately for the batter, it looked as though the ball was going to go over the strike zone, so he struck at it and missed. In that context, for the pitcher it was a good pitch; for the batter it only looked like a good pitch; and for the umpire it was not a good pitch at all since it did not go over the strike zone. Garagiola's evaluation makes sense only when specific details are supplied from the context of the utterance. If we analyze this phrase in Katz' system, we would have to incorporate three different perspectives into pitch: the pitcher's, the batter's and the umpire's.

Support for the claim that the two apparently different senses of good—the 'value' sense of a good man, a good knife, and the 'amount' sense of a good two miles—can be generalized as a single meaning comes from good's suppletive adverb well and from the related adjective great. Well performs the same function in relation to verbs, adjectives, and other adverbs that good performs in relation to nouns; i.e., it predicates a positive evaluation. As good does, it occupies a position on the scale of values that is to the right or positive side of the base value which indicates that whatever action or process that is being evaluated was done 'in a manner that is adequate for a specific requirement'. Well thus indicates 'in a manner that is more than adequate [sufficient] for a specific requirement'.

Well's general meaning is not only evident in the use of intensifiers but also in the use of comparatives. The possible uses of intensifiers are quite varied, including fairly well and pretty well on the negative side to quite well, awfully well, very well, and extremely well on the positive side. The comparatives better/best and worse/worst range over the entire scale of the badly-adequately-well value states.

In addition to occupying the same positive position in an evaluation scale, well also has other characteristics in common with good. It evaluates both quality and quantity.

14. They lived well. — 'They lived in a manner that was more than adequate for a specific requirement'.

15. He took the news well. — 'He took the news in a manner that was more than adequate for a specific requirement'.
16. Stir well before cooking. — 'Stir to a degree that is more than adequate for a specific requirement before cooking'.
17. They advanced the troops well into enemy territory. — 'They advanced the troops into enemy territory to a degree that was more than adequate for a specific requirement'.

When well evaluates quality, it states a positive evaluation of manner or how something is done; when it evaluates quantity, it states a positive evaluation of the degree to which something is done. This generally conforms with the way good patterns in evaluating quality and quantity.

Though the paraphrase relations between good and well are varied, and though there are some well constructions that seem to defy paraphrasing, on the whole the evidence points to single generalized meanings for both good and well. In most instances, well constructions of a specific type seem to be more or less loosely paraphrased by good constructions of a particular type. Constructions containing well plus a past participle that precedes the noun it modifies can in most instances be paraphrased with either a relative clause or a with phrase containing good.

18. the well-dressed people walking slowly in couples — the people who were dressed in good style OR the people who wore good clothes
19. well-brought-up boy children — boy children with good upbringing

Well constructions that deal with amount or degree can regularly be paraphrased with a good way, a good distance, a good deal, or to a good degree.

20. The cork holds the bait well off the bottom keeping it away from bottom fish. — The cork holds the bait a good way off the bottom keeping it away from bottom fish

Those containing a modal plus well plus verb may be paraphrased as with good reason or have good reason.

21. It may very well depend on . . . — It may with good reason depend on . . .

When the construction refers to health, it may be paraphrased with in good health.

22. I do hope you are both well. — I do hope you are both in good health.

Constructions beginning with It is well, paraphrase as There is good reason, and others that seem to have no common characteristic paraphrase as doing a good job. And, of course, there are

those inevitable few that seem to have no paraphrase relations with good at all, or at best very awkward ones. The lack of good paraphrases for a limited number of constructions may reflect the fact that good is an adjective and well is an adverb, with different syntactic restrictions.

Additional evidence that good has a single generalized meaning independent of the noun it modifies can be demonstrated by comparing it with the related adjective great. Great follows the same pattern as good, in most instances illustrating a higher positive degree on the evaluation scale. Sentences 23-25 illustrate that this is the case.

23. If that person is a man, that's good. If that person is a woman, that's great. (David L. Shores)
24. A good bed is one to plop into. Sink into squashy pillows. Wriggle under puffiness and warmth of a clean, soft comforter. That's a good bed. A great bed gives you "five minutes more" of curl-up bliss in your snuggly cocoon until the last possible moment. (ad, American Home)
25. My wife doesn't make good burgers anymore; she makes great burgers. (ad)

In each example, good indicates a state that is more than adequate for whatever is being evaluated, while great indicates 'a state that exceeds adequacy by a considerable degree'. The two terms cannot be reversed in any of the three sentences, illustrating that the second of the two terms is obviously an intensification or a higher degree of the other.

Great can substitute for good in noun phrases with head nouns that can be evaluated according to quality.

26. This is a good/great knife.
27. I had a good/great sleep.
28. We got off to a good/great start.
29. He is good/great at dancing.

It can also substitute for good in noun phrases with head nouns being evaluated according to quantity or amount.

30. It took a good/great deal of doing and a good/great deal of time but we got the seed.
31. Vern Anderson says pluggers are taking good/great numbers of school-size stripers . . .
32. I have known him for a good/great many years.

Though good and great are parallel over an extremely wide range of uses, there are environments where good can occur and great cannot and vice versa. In one instance the meaning of the word great itself prohibits its use in certain constructions where good is acceptable. For example, great cannot be substituted for good when the head noun names a specific number or amount, such as mile, minute, or pound.

33. Smithtown is a good two miles away. — *Smithtown is a great two miles away.
 34. I was delayed a good twenty minutes. — *I was delayed a great twenty minutes.
 35. The melon weighed a good two pounds. — *The melon weighed a great two pounds.

In measurements where a specific number or amount is named, good is acceptable because it indicates a level on the evaluative scale that is only 'more than sufficient for a certain measurement', whereas great, exceeding sufficiency by a considerable degree, indicates a level on the evaluative scale that would be shown better by going up to the next highest amount and qualifying it with almost. Instead of saying the melon weighed a great two pounds, one would say the melon weighed almost three pounds.

In another environment great can occur and good cannot. Here the meaning of the head noun itself is such that the quality or quantity named already exceeds the level of good. For this reason, nouns such as daring, power, and toll, do not appear with good, but can occur with great as a modifier: great daring, great power, and a great toll.

A similar problem is the use of good and great with the head nouns woman and man. Great woman is not necessarily a higher degree of good woman. What we are facing here is a matter of a standard for morals whose highest point is good. When we evaluate women and men for physical and intellectual qualities, the highest point on the scale again becomes great. One then may say that someone is a good man for a particular job or a great man for a particular job.

Another environment in which good and great seem to diverge in meaning is that where great apparently means large.

36. Great sequoias towered to the skies. (Loren Eiseley)
 37. . . .it was a great, square-logged gray cabin closed by a breezeway. . . (James Agee)

Good will not substitute for great with a retention of the same meaning although good-sized will. In each of the sentences where great occurs seemingly meaning 'large', great-sized can occur with the same meaning; apparently, good needs an explicit amount noun to have an amount meaning. This may be explained by the fact that though good and great are now in the same semantic field, they were originally in different ones. Great originally meant 'large' or 'coarse', and good meant 'fitting' or 'uniting'. The use of great to mean 'large' may be evidence of this original difference.

All three words - good, well, and great range over both 'amount' and 'value' senses; this similar range suggests that these two senses are specializations of a more general sense, and, thus, that good, well, and great each have only a single general meaning.

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ENGLISH WORDS DERIVED FROM GEOMETRICAL TERMINOLOGY

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One of the most significant sources of information about the world around us is vision. Psychologists generally believe that visual stimuli may influence concept formation and general thought processes. To quote Morgan and King (1966:166-167): "Images may promote learning and...they may at times have a mediating function in thinking." The psychobiologist R. L. Gregory (1970:13) goes so far as to say that vision may be the most important of the sensorial inputs: "Eyes require intelligence to identify and locate objects in space, but intelligent brains could hardly have developed without eyes. It is not too much to say that eyes freed the nervous system from the tyranny of reflexes, leading to a strategic planned behaviour and ultimately to abstract thinking."

In education, audio-visual techniques (i.e., heuristic verbal and visual stimuli) have been developed in order to facilitate the learning process in all its dimensions (association, retention, etc.). Unfortunately, such pedagogical aids are often not used by educators because, as Paul R. Wendt (1967:175) points out, the term "audio-visualism" may connote: "(1) something used by poor teachers who cannot teach without gadgets, (2) a luxury to be trimmed off the budget in hard times, and (3) a mental crutch for backward pupils."

Human language is also profoundly influenced by the sense of sight. Linde and Labov (1975) have recently demonstrated that conceptions or interpretations of spatial reality definitely influence grammatical structure (i.e., the visual cognitive input influences the grammatical output). However, in general the importance of vision in language has been underestimated or completely ignored. But a few examples will suffice to illustrate how the sense of sight plays an important role in English in portraying abstract thoughts or ideas (which are of course non-visual mental phenomena):

- (1) It *looks* like a good idea.
- (2) I cannot *picture* what you are saying.
- (3) These examples may shed some *light* on that philosophical problem.
- (4) Professor Smith's lecture was *illuminating*.

(5) I do not *see* the point of your argument.

(6) John *saw through* that plan.

(7) Your conclusions are not *clear*.

Sentences such as these seem to point to a psychological need to "visualize" (i.e., to reduce to visual phenomena) concepts, ideas, abstractions, beliefs, etc. As Colin Cherry puts it: "We have come to regard the 'external real world' as sending signs or stimuli to our eyes, ears, and skin; we see or hear this world 'through' our eyes and ears, as though 'we' were all little creatures sitting inside skulls, looking and listening through eye and ear windows and keyholes." In Preziosi's (1978:52) opinion, the language faculty functions as "an auxiliary sense-modality, a further refinement and integration of biologically-given perceptual apparatus."

By using what we shall call "geometrical" lexemes (i.e., words derived from the lexicon of geometry), we hope to show that this aspect of language—the representation or interpretation of ideas, concepts, etc. in visual terms—merits the attention of linguists and, perhaps, further investigation.

The science of geometry itself, which originated some two thousand years ago in Egypt (at the dawn of civilization), grew out of the need to give structure and meaning to the chaos of space. Geometry is therefore closely linked to language, which is also a product of the need to classify and understand reality. As Preziosi (1976, 1977) has cogently argued, there is even a relationship of similarity between applied geometry, or architecture, and the structure of language.

Geometrical lexemes may be loosely defined as those items of vocabulary which, by the extension of their literal or denotative meaning, either represent abstract ideas themselves or transfer a visual association (by their collocation) to words representing ideas, concepts, etc. (i.e., words marked by the semantic feature [- concrete]). Although these lexemes are almost always used in formal speech (a register which is perhaps more marked by the occurrence of abstractions than any other register), they nevertheless illustrate the psychological need to reduce non-physical aspects of experience to sensorial terms. These words are stylistic devices which exemplify a special type of figurative language. They form a lexical bridge between mental and physical reality.

The following sentences may be used to illustrate this figurative use of geometrical words:

(8) Jung's theories cover a wide *area* of psychological knowledge.

- (9) The physical theories of Galileo and Newton are *asymptotic* rather than *coincident*.
- (10) A linguistic unit exists simultaneously on two *axes*, a paradigmatic one and a syntagmatic one.
- (11) One of the *central* issues in structural phonology is whether or not the phoneme has psychological reality.
- (12) There are various psychological *dimensions* to Max Weber's sociological theories.
- (13) Galileo's concept of the universe is *congruent* to that of Copernicus.
- (14) A study such as the *Principia Mathematica* relocates the *co-ordinates* of a specific field of knowledge.
- (15) Italo-Canadian may be defined as a language in which three codes *intersect*: Canadian English, Standard Italian, and native Italian dialect.
- (16) Pike's ideas on language are generally in *line* with those of taxonomic linguists.
- (17) The *locus* of the morphophone in an overall theory of language has not as yet been definitively established.
- (18) It is now believed that the calculus is a product of the *parallel* ideas of Newton and Leibniz.
- (19) Gleason's recent views on language fall within the *perimeter* of stratificational theory.
- (20) Meaning exists on a different linguistic *plane* than form.
- (21) I do not see the *point* of your thesis.
- (22) Our views are at opposite *poles*.
- (23) At the *vertex* of Beethoven's musical output is the *Missa Solemnis*.
- (24) Instances of *circular* reasoning led to a re-examination of the logical foundations of mathematics.
- (25) Totalitarianism and democracy are *diametrically* opposed political philosophies.

- (26) *Elliptical* statements can lead to serious misunderstandings.
- (27) I do not understand those concepts; they are not within the *radius* of my experience.
- (28) Issues from the economic *sector* of society are constantly making headlines.
- (29) Minimal *segments* of sound which serve to distinguish meaning are called phonemes.
- (30) The members of that family were able to *square* accounts in a peaceful manner.
- (31) Polymorphism and free variation are *tangentially* related concepts.

More geometrical words in similar contexts could be used. However, the point should now be clear: these words are employed metaphorically to portray abstract reality in terms of two- and three-dimensional geometry. They are lexical maps of the world of abstract thought.

A detailed discussion of the nature of the semantic space that contains such lexemes would be beyond the scope of the present paper. However, there is one trait that is common to all these words, and that is the semantic feature [+visual]. It is the addition of this feature (which is conceptually associated with the feature [+concrete]) to the semantic space marked by [-concrete] that makes the study of these words interesting. Perhaps the investigation of words marked by the features [+auditory] and [+tactile] (and used in concomitance with [-concrete]) may reveal a similar phenomenon (e.g., I cannot *grasp* that concept, etc.). The apparent asymmetric configuration of semantic features exemplified by the use of these words in the contexts described above is probably due (as already mentioned) to a basic psychological mechanism. Geoffrey Leech (1974:44) calls this phenomenon "conceptual fusion"; it gives users of language the opportunity to break through "the conceptual bonds with which language constrains us." (Leech 1974:43).

The co-occurrence of contrasting semantic features is, of course, at the basis of metaphoric processes. The role of metaphor in language, which has always received the attention of literary scholars, has recently been seriously investigated by linguists. As Robert J. Di Pietro (1976:7) states: "Being able to accept metaphors as realities is important for the functioning of creativity in all sorts of human endeavors." Anatol Rapoport (1975:149) observes that: "Education is the process of mastering metaphor." This brief paper has attempted to show that a special type of metaphorical process is a result of the tendency to portray all

aspects of reality in sensorial terms. Further research in this area may provide the semanticist with a clearer perspective on the nature of meaning. Semantic features such as [+ visual] should be taken into consideration in a complete theory of meaning, otherwise the status of such a theory may be seriously undermined.

We conclude on a philosophical note. In the fascinating story *Flatland*, by Edwin A. Abbott, the two-dimensional protagonist has been imprisoned for claiming the existence of a three-dimensional world. During a moment of hope he says: "I exist in the hope that these memoirs, in some manner, I know not how, may find their way to the minds of humanity in Some Dimension, and may stir up a race of rebels who shall refuse to be confined to limited Dimensionality." (Abbott 1952:102). We are indeed prisoners of a "limited dimensionality", both geometrical and linguistic. Paradoxically, an occasional escape from this prison is made possible by means of linguistic phenomena such as conceptual fusion which, in the words of Leech (1974:45), have "a liberating effect, counteracting and reversing the child's progressive domination by the 'bony-structured' world of language."

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OBELI: THE DOGMA OF USAGE VERSUS THE DOCTRINE OF RECEIPT

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"Classic" always carries this connotation of wasteful and archaic ... So the archaic idiom of the English language is spoken of as "classic" English. Its use is imperative in all speaking and writing upon serious topics, and a facile use of it lends dignity to even the most commonplace and trivial string of talk. ...[In] the everyday speech of leisure class conversation and literature ... a discriminate avoidance of neologisms is honorific, not only because it argues that time has been wasted in acquiring the obsolete habit of speech, but also as showing that the speaker has from infancy habitually associated with persons who have been familiar with the obsolescent idiom. It thereby goes to show his leisure-class antecedents.

.....

As felicitous an instance of futile classicism as can well be found, outside of the Far East, is the conventional spelling of the English language. A breach of the proprieties in spelling is extremely annoying and will discredit any writer in the eyes of all persons who are possessed of a developed sense of the true and beautiful. English orthography satisfies all the requirements of the canons of reputability under the law of conspicuous waste. It is archaic, cumbersome, and ineffective; its acquisition consumes much time and effort; failure to acquire it is easy of detection. Therefore it is the first and readiest test of reputability in learning, and conformity to its ritual is indispensable to a blameless scholastic life.

--- Thorstein Veblen¹

Obeli is the "classic" plural of obelus -- the name both of the dagger symbol (second, after the asterisk, of the standard nonnumerical footnote reference marks) and of the division sign.² Webster's Third New International Dictionary uses the horizontal obelus (÷) to mark pronunciations that "many people regard as unacceptable."³ But no comparable warning is given for widely appropriated SENSES of words -- such as infer used to mean "hint" or "imply" (senses four and five). My thesis is that there is a STANDARD FORMAL WRITTEN ENGLISH that is conservative in the true and best sense, that is, pace Bloomfield and many followers, linguistically interesting, and absent the influence of which we could not now read Shakespeare except as we do Chaucer (nor Chaucer except as Beowulf) -- and that Webster's Third would have

been a better dictionary (and would have averted a critical brouhaha) had the editors obelized, as a warning to the careful (or linguistically insecure) stylist, the word senses and spellings that many educated people resist accepting.

It seems odd that the editors of Webster's Third chose to obelize pronunciations -- which scarcely affect written English, and have rather successfully resisted the standardization we see in orthography, etc.-- and NOT to obelize variant spellings like input⁴ for input, nor usages like literally to mean "figuratively, virtually" or malapropisms like parameter to mean "perimeter, extent."⁵ These are, and pronunciations are not, distinctions needful in writing, editing, word-processing, and publishing standard formal written English texts.

I don't mean that educational persuasion and language guidance should eschew phonological matters altogether. We ought, indeed, to be spreading tolerance for dialectal divergence, and we can coexist happily (hopefully⁶) with divided usages like ECKonomics--EEKonomics, heightT-heightTH, FebY00ary-FebR00ary, EEther-EYether, etc. But we might well encourage the standard pronunciation with /-ks-/ of words spelled with -cc-, like flaccid, succinct, and accessory, and DIScourage the extension of velar softening to the first c in each. As Middleton says, "I favor public contumely for anyone guilty of "assessory" or "sussinct" or "flassid," lest some day we be plagued by "susseed" and "assident"; and of course they'll be legitimized. After all, nothing susseeds like sussess" (loc. cit. note 5). A complementary violation of the orthographic-to-phonetic regularities of English is heard in the widespread FAILURE to soften the c of proboscis -- i.e. pronouncing an /-sk-/ cluster here. The notion of spelling pronunciation is well established, but these are spelling MISpronunciations.

Then there are **pronunciation spellings** -- like French clé, which is replacing clef ("key"). Pronunciation spellings in English include britches, bosun, and gunnel, about the last of which the Oxford English Dictionary says "the usual spelling is still gunwale, though the pronunciation (gu·nwē·l) is, at least in Great Britain, never used by persons acquainted with nautical or boating matters." On the other hand, the full-vowel pronunciation is given for waistcoat, the reduced one being labelled "collog. or vulgar" -- which would surprise many a modern Briton -- and the pronunciation spellings are dismissed with the remark "in representations of vulgar pronunciation written weskit, veskit, etc." Other examples are gantlet, sassy, innards, vittles, etc.-- though the last antedates victuals, a Latinized form inflicted upon English (like island for i·land) by learned tinkering.

Popularization of pronunciation spellings has the unfortunate side effect of virtually eliminating our freedom to use the traditional spellings -- breeches, saucy, boatswain, etc.-- with any hope of being understood to represent thereby the traditional pronunciations. It would be too bad if pronunciation spellings like sez (that favorite of the comic strips) and offen were to catch on

in response to the spelling pronunciations of often and says, for example.

It is true that all living languages change and dead ones don't. On the other hand it does not follow that the knowledgeable must accept each and every innovation with open arms. We do not know enough about the effects on language change of widespread literacy and ubiquitous promulgation of print-- even less about future effects of computational word processing and the special role of English as a world language. Certainly the long-term effects of archived speech recordings on phonology and sound change can only be dimly guessed at.

Linguists are prone to take the historical long view which blinks at the disruption caused by innovations while the changes are in progress. Similarly, biological evolution is wonderful in the long view. In the short run it is more evident that the overwhelming preponderance of genetic change is dysfunctional: while the evolutionary adaptation of a species is taking one small step, thousands of individuals have to suffer the ill effects of caco-genic mutations.

Languages change faster than species do, to be sure, but the rate is still glacially slow compared with the exiguity of our lives. We see and hear constant innovation, of course, but the vast majority of neologisms and new usages have brief careers as slang and then fall by the wayside, making no net contribution to the slow evolution of our language. The linguist's doctrinaire welcoming of changes in English is very peculiar. Language changes are dysfunctional at least while in progress-- or better, while their progress is in question, since it is very clear that changes begun are not linearly progressive nor uniformly successful. Language changes are essentially cacocommunicative. Furthermore, opposing innovations, especially selectively, will not stop English from changing-- and therefore the fact that all living languages always change is wholly irrelevant as an argument against attempts at indoctrination-- i.e. education-- promoting TRADITIONAL usage, spelling, pronunciation, etc.

It is not my purpose to proselytize for prescriptivism, which word itself frames the issue misleadingly. A dictionary that warns those of us linguistically concerned or insecure enough to look up doubtful words used in our writing, or encountered in our editing, that many educated people are quite annoyed when (for example) they read "the building is comprised of five wings" for "it comprises five wings" is not at all PRESCRIBING what form we shall use-- that's quite impossible, in a free country-- but rather describing an empirical fact about the language in its social setting. As Laurence Urdang says, after quoting Kenneth Kister to the effect that "the lexicographer must give the user an adequate indication of the attitudes of society toward particular words or expressions," "If anything, *w3* isn't sufficiently descriptive ... [of] the way people feel about the usage levels of the words and senses the editors chose to leave unlabeled."⁷

Those troubled by describing as empirical data the "subjective" attitudes and reactions of hearers or readers could, in principle, monitor their pupillary or galvanic skin responses, thus making it properly behavioral and "scientific."

The critics of Webster's Third⁸ made many blunders, such as forgetting to check whether their bêtes-noires neologisms were already admitted in their precious Webster's Second, and -- as my epigraph suggests -- there is much snobbery involved in finding fault with others' language. On the other hand, the defenders of descriptivism emerge as scurilous polemicists. We who have followed linguistics in the past two decades are accustomed to scathing attacks -- but not ones which cross the line into ad hominem argument or the use of humilific epithets, as do both Sledd's and Kilburn's attacks on Follett and MacDonald for daring to criticise Webster's Third. Patrick Kilburn repeatedly uses Dwight MacDonald's given name in the forms "Dwightiots" and "Dwightiotic crew" to pejorate MacDonald and those who agree with him,⁹ and Sledd himself, the chief editor, giving himself the last word, says "Mr. MacDonald would think and write better, AND WOULD BE A BETTER MAN, if he were more easily sobered" (emphasis mine).¹⁰ That is not a contribution to rational debate.

A virulent strain of sexism runs through these pieces. One might expect that from the conservatives, who would find he and she, her or him, etc., too awkward, and "everybody took their marbles and went home" too innovative and neologistic. But where we really get sexism -- and ageism too -- is from the linguisticians. Kilburn calls the "prescriptivists" -- his straw-man opponents -- repeatedly "old maids of both sexes."¹¹ Even after MacDonald gently pointed out that he for one was married, Kilburn repeated the phrase in his reply. And Sledd ends the book with his own ringing pronouncements that "No MAN should let another choose HIS language for HIM," and "The constructive critic of the Third International will be the MAN who shows how its descriptions can be improved" (p. 274, emphasis mine). (Granted, that was 16 years ago, when consciousnesses were even less raised than now.)

I think that clearly a dictionary like Webster's Third could have its descriptions improved by the use of OBELI -- to aid users who want to be assured not only that a certain meaning or spelling of a word is USED, but also that it is well RECEIVED. That is the doctrine of receipt.

NOTES

¹ "The Higher Learning," The Theory of the Leisure Class, New York, 1899, pp. 398-99.

² The latter evidently derived by rotation and abstraction. Obelus is akin to obelisk-- but not to olisbos ("leathern dildo"), which, in the phrase "an olisbos-like flashlight," is the only "blue" word in Nabokov's magnificent but suppositiously pornographic novel LOLITA (Greenwich CT:Fawcett, 1959, p.88; 1st ed. Olympia, 1955).

³ I am grateful to my quondam colleague Rulon Wells for directing my attention to the ancient origins of this sense, from the use of obeli by (e.g.) Zenodotus of Ephesus (fl. 280 B.C.), first superintendent of the library at Alexandria and first critical editor (diorthōtes) of Homer, and Aristarchus of Samothrace (c. 220-143 B.C.), also librarian at Alexandria (succeeding his mentor, Aristophanes of Byzantium) and founder of the Aristarchean school of philologists. (A later Zenodotus, of Mallus, like his master, Crates, attacked Aristarchus from the library [2nd only to that at Alexandria] at Pergamum [etymon of parchment, from the primatial exploitation of that material there] where they maintained the allegorical theory of exigesis.) See also George M. Bolling, The Athetized Lines of the Illiad.

⁴ Which looks suspiciously like a ghost word (cf. Allen Walker Read, "The Sources of Ghost Words in English," in press, WORD, 29, 1978); one would like a count of the Merriam citations.

⁵ See Thomas H. Middleton, "Syndromes, Parameters, and Sibilants," in his Light Refractions, Essex CT: Verbatim, 1975, pp. 34-5. (Rpt. of his Sat.Rev./World column for Feb. 13, 1973.) Webster's Third, whose 1961 publication antedated this particular malapropistic vogue, omits the sense entirely-- but no doubt the Merriam editors are assiduously collecting "cites" of it for Webster's Fourth (as of course they should; my argument is for obelization, not expungement).

⁶ Middleton gives a good review of this shibboleth in "Hopefully" and "Hopefully Revisited," in his Light Refractions, pp. 97-9 and 113-15.

⁷ Rev. Dictionary Buying Guide, Verbatim, V.1 (May 1978), 7.

⁸ see esp. the cross section provided by James Sledd and Wilma R. Ebbitt, eds., Dictionaries and THAT Dictionary, Chicago: Scott, Foresman, 1962.

⁹ Ibid., p. 267. ¹⁰ Ibid., p. 270. ¹¹ Ibid., pp. 208, 267.

II

PHONOLOGY, PROSODICS AND GRAPHEMICS

MARKEDNESS AND PHONOLOGICAL SYSTEMS

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Markedness has been an essential concept in linguistic analysis since 1930 when it was pioneered by Trubetzkoy and Jakobson and applied immediately to phonology (Trubetzkoy, 1931, Jakobson, 1931a) and to grammar (Jakobson, 1931b). It was recognized that all phonological oppositions (and likewise all morphological, grammatical, syntactic, semantic oppositions) contain an inherent asymmetry, which in fact is part and parcel of the notion of opposition. The asymmetry results in a weighting of, a focussing upon, a restriction of, an active modification of one of the poles of the opposition while the other remains unweighted, unfocussed, unrestricted, passive (See Trubetzkoy, [1939] 1969 and 1975, Jakobson and Waugh, 1979). Thus, for example, in the opposition nasal-non-nasal (oral)¹, nasality is a weighting, is the more restricted property or characteristic while orality is the non-weight. And so forth for all the features.

Evidence for the markedness of given features comes from various sources. These include the order of acquisition in child language and the order of loss in aphasia (where the first to be learned and last to be lost is generally the unmarked -- see Jakobson 1941), the presence of a given segment in places of internally-conditioned neutralization (Trubetzkoy [1939] 1969), universal and near-universal properties of given features and feature combinations (Jakobson, 1941, 1963), directions and kinds of historical change (Jakobson, 1958, see also Andersen, 1968, 1972), etc. Greenberg (1966) is a useful summation of certain of the symptoms of markedness -- e.g., frequency counts, wideness and type of distribution (including the problem of the interrelation between markedness and neutralization), contextual variation, and so forth. But we must also recognize that each of these phenomena evidence their own panoply of factors. For example, the learning of a given feature early by children does not in itself constitute absolute evidence for its non-markedness. Russian children often learn first the dental consonants in their sharp variety but the labial consonants in their non-sharp variety. Of course, perceptually, the contrast between a sharp 't^j' and a non-sharp 'p' is greater than non-sharp 't' vs. non-sharp 'p'. Another example is the early learning of labial (grave) consonants by many children before their dental (acute) counterparts. And yet it is clear from the evidence of various languages -- including the much greater differentiation of dental consonants vs. their labial counterparts -- that gravity is the mark and acuteness the non-mark (see Jakobson and Waugh

1979; see also Waugh, 1976).

But even here we are dealing only with symptoms of the phenomenon, not with the phenomenon itself. If we turn to the phonological system per se, it is evident that the system -- at least in its most basic patterning -- is founded on the universal and perceptually most prominent distinction consonant-vowel. As a first approximation, one may say that non-marks tend to be those values of features which enhance this opposition, while marks tend to be those values which attenuate it. Thus, for example, the feature of nasality is a mark in the consonants since it brings the consonants perceptually closer to the vowels (by prolonging the consonant, introducing some formant-like structure, etc.); it is also a mark in the vowels since it brings them closer to the consonants (by reducing the total energy, introducing zeros in the spectrum, etc.). Likewise, the feature of continuancy is a mark in the consonants since it makes the consonants more vowel-like. Of course, one gets further refinements within both of these categories, especially in those (majority of) languages which supplement the consonant-vowel dichotomy with liquids and glides, thereby creating a 3- or 4-way split. In such cases, the relation C-V becomes more complex. For example, from one perspective, stops are most different from vowels, being non-continuant and low in energy while from another perspective fricatives provide a large perceptual contrast to vowels, being noisy and high in energy. Much more work is needed before we will understand exactly what markedness entails -- and that work includes a very sophisticated analysis of the system itself, and especially its existence for perception.

From the evidence we do have, it has become clear that, first of all, it is not always the case that the so-called "positive" pole of a distinctive feature (or in other words, that pole which is seen as identifying an extra acoustico-perceptual property) which is marked. In the opposition voiceless ~ voiced, in the vowels, voicelessness is the marked pole while voicing is unmarked. It is also, obviously, not the case that one always has to do with presence vs. absence of a given characteristic from the physical point of view. In the opposition tense ~ lax in the consonants, inevitably even lax phonemes have a certain amount of tension or else they wouldn't be perceivable -- it is a question here of more vs. less tension, and not presence vs. absence (cf. Trubetzkoy, [1939] 1969, Jakobson, 1962). But that is looking at it from the point of view of the physical quality itself. Viewed in terms of markedness, the tense ~ lax opposition is privative (presence vs. absence) like any other. In the consonants, for example, tenseness is a mark and laxness a non-mark, so we have to do here with the presence of a mark (tenseness) vs. its absence (laxness). It is probably the case that all oppositions from the physical point of view are more vs. less -- even in the nasal ~ oral opposition oral phonemes may have a slight amount of nasality in the vicinity of other nasal phonemes, so that it is best seen as an opposition of more vs. less nasality, where less nasality includes none at all. Thus, as

Jakobson says (1962:643), "the contradictories become contraries". On the other hand, from the point of view of markedness, all oppositions are presence vs. absence -- either a given phoneme carries the particular mark or it doesn't. Thus, contraries are turned into contradictories (privative relations). (So-called 'gradual' oppositions (Trubetzkoy, [1939] 1969) are actually also complex manifestations of markedness and thus are binary and privative -- but I won't argue that further here.)

Given these rather elementary observations, it is the purpose of this paper to explore one aspect of markedness which is of particular usefulness for understanding types of phonological systems: the kinds of patternings which tend to exist in terms of combinations of marks and non-marks. There are, generally, two types of combination in language -- concurrent (simultaneous) and sequential: the concurrent combinations build the elements (e.g., phonemes) of the system; the sequential combinations use those elements to build larger wholes (e.g., syllables; morphemes, words). Since, hierarchically speaking, the concurrent combinations are logically prior to the sequential combinations, we will focus on them.

One aspect of markedness which has been pointed out is its "context-sensitivity" (called "conditional" by Greenberg 1966; present also in Chomsky and Halle, 1968 used extensively by Gamkrelidze, 1975, 1977 and Melikišvili, 1970, 1974, 1976). It is not at all the case that a given value of a given feature is always the marked one, but rather that it depends on the rest of the context (i.e., the bundle, the *Gestalt*) in which the given feature occurs. One major such context in phonological systems is the difference between consonant and vowel: in the vowels diffuseness (high vowels) is the mark while in the consonants compactness (back consonants) is the mark. Another major sub-division is the difference between resonants (vowels, nasals, liquids) vs. obstruents (stops, fricatives). In the resonants voicelessness is the mark, while in the obstruents voicing is the mark. In the obstruents, continuancy is the mark, while in the resonants, non-continuancy is the mark. Other contexts define other sub-systems of phonological systems: e.g., in the compact (back) consonants, acuteness (palatality) is the mark, while in diffuse (front) consonants, gravity (labiality) is the mark.

We may, speak, in such cases, of "markedness reversals", of the "switching" of the weighting from one pole to the other of the opposition as it enters into various combinations. Thus, one simply cannot talk about markedness in isolation. The question, is voicing a mark?, makes no sense without further specification of the context. Furthermore, very often these contexts give major sub-divisions of the system - e.g., consonant-vowel, resonant-obstruent, compact-diffuse consonants, etc. An exploration of such reversals might lead to a better understanding of what these major divisions are.

Some so-called "markedness reversals" are actually not reversals at all but rather the action of two different features

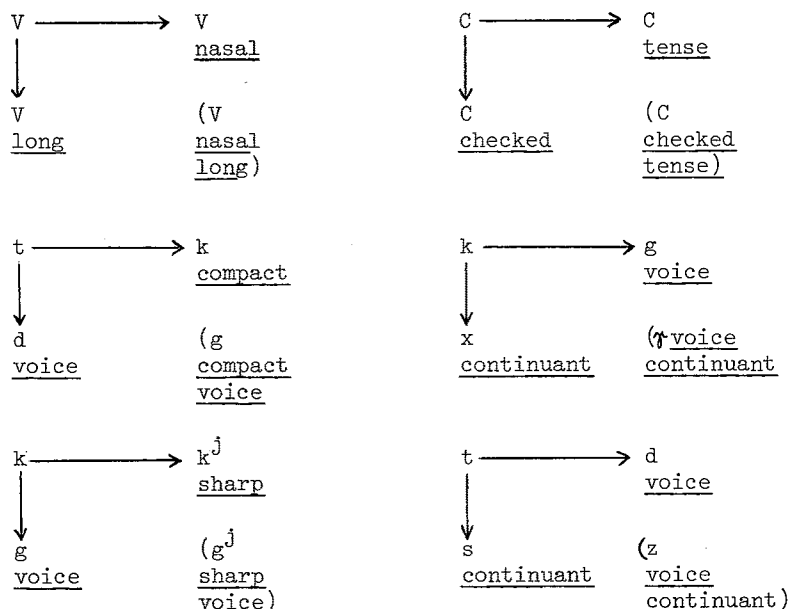
with differing effects: this is especially notable cross-linguistically. Thus, in some languages, the correlation of voice is present in consonants, and correspondingly voicing is the mark and voicelessness the non-mark (e.g., Russian, Yiddish); in other languages, the correlation of tenseness is present with tenseness the mark and laxness the non-mark (e.g., English, German, French). And Russian children tend to learn 'p' first while English children tend to learn 'b'. In such cases, to say that 'p' is marked in one language (because tense) while unmarked in another (because voiceless) makes no sense -- the 'p's in the two languages are not the same perceptually, functionally, semiotically, not to speak of physically.

Another commonly recognized phenomenon I will call "the tendency not to accumulate marks -- or the tendency to combine markedness with non-markedness". This correlates with the observation that certain phonological sub-systems tend to be more differentiated than others. For example, since in the consonantal system, nasality is a mark, there is a general tendency not to elaborate the nasal consonants more than or even equally to the oral consonants. In other words, the nasal mark is generally not combined with other marks -- so that a non-continuant ~ continuant distinction is often missing in the nasals while it is most often present in the orals (giving stops vs. fricative); the tense ~ lax or voiceless ~ voiced distinction may be missing in the nasals but present in the orals in a language which uses either or both of these; the nasals may evidence less 'points of articulation' than the corresponding stops/fricatives and in particular velars and palatals may be missing since they are marked (compact) vis-à-vis the dentals and labials. Likewise, in the system of vowels, nasal vowels are never higher in number than their oral counterparts and usually are fewer.

Similarly, the unmarked dental and labial consonants tend to be much more elaborated than their marked velar counterparts. Systems tend to lack compact nasals, compact fricatives, voiced or tense compacts, sharp compacts, etc. Likewise, the unmarked dentals tend to be more elaborated than their marked labial counterparts. Thus for example if there is a lone fricative, it is generally an /s/; /n/ tends to be the major representative of the nasal feature; oppositions of voicing, of tenseness, or sharpness, etc. are more often found in the unmarked series. Since palatalization (sharpness), velarization, rounding, and pharyngealization (flatness), aspiration (tenseness) are all marks, the number of consonants with these 'secondary' modifications tends to be no more than and often much less than, their unmarked opposites (e.g., in Russian č̌, š̌, ž̌, x̌ are missing, and ǧ is a recent innovation with still restricted usage). In languages with stops and fricatives, often fricatives are less elaborated than stops for place and manner of articulation, for continuancy is the mark and non-continuancy the non-mark, and of course there are many languages which lack fricatives altogether, or where the basic implementation of the

obstruents is as a non-continuant. Similarly, the tense (unmarked) vowels are widespread among languages of the world, while the lax (marked) vowels are not -- many languages lack the /I/ and /U/ of English, the mid vowels are often not subdivided into tense and lax pairs, and low vowels are, in the majority of languages of the world, not subdivided into tense and lax counterparts. One manifestation of the fact that markedness is a focussing, a narrowing, is, then, in the restriction (the narrowing) of the number of contextual conditions under which it can occur. And since marking is a focussing, it is clear why there would be a tendency against combining too many foci in one bundle.

Thus, schematically, "3-termed" systems tend to appear (with the absent "fourth-term" being the doubly marked one) with two privative relations (shown by '→'):



etc.

What all of this means in terms of phonological systems is that they have a tendency toward so-called "holes". Systems, by their very nature and because of the intrinsic pattern of markedness, tend to be asymmetrical. The "tendency toward the non-accumulation of marks" is at the same time the "tendency toward asymmetry". I think that in modern times we have become too enamoured of notions of balance, of a system 'où tout se tient' by virtue of its symmetry. We have forgotten that asymmetry can also be part of a system 'où tout se tient', that language change and the general dynamism of the linguistic system attest to its underlying hierarchization, that a system of choices implies different weightings between the choices.

Otherwise, language structure would be random and arbitrary, and we know from work e.g., in typology and universals, in child language and aphasia, in language change, that language structure is anything but random and arbitrary. Rather the seeming inconsistencies, the at-first inexplicable imbalances prove to have a functional, a purposeful foundation.

Another major tendency in phonological systems is that of "maintaining maximal perceptual contrasts" between the members of the system -- of making the perceptual differences "optimal" ones. (cf. the notion of optimality in Jakobson's work - see 1971). This leads often to the combination of a mark with a non-mark in one set of phonemes vs. the opposite non-mark with the opposite mark in another set. Now, in many systems, only one of the features is distinctive and the other is redundant -- in such cases, the redundant differences act as a perceptual enhancement of the distinctive difference. In English, for example, certain obstruents are opposed as (marked) tense vs. (unmarked) lax; but the distinctive tense ~ lax opposition is further enhanced by the redundant opposition voiced ~ voiceless. Other systems reverse the hierarchy and distinctively oppose marked voice to unmarked voiceless, with a redundant enhancement of unmarked lax vs. marked tense. Of course, there are some systems such as Swiss German which use only tense ~ lax, implementing both as the unmarked voiceless, or such as Russian which uses primarily voiced ~ voiceless, implementing both as the unmarked lax, it would seem. It is interesting to note in this connection that some English children learn the unmarked voiceless (and lax) 'p' first, then substitute for it a lax (unmarked) but voiced 'b', and then later learn the (marked) tense (and voiceless) 'p'.

Within the obstruents, the distinctive opposition in many languages is that of continuant ~ non-continuant enhanced by the redundant opposition non-strident ~ strident. Cf. Jakobson's observation (Jakobson and Halle, 1971) that the optimal fricatives are strident whereas the optimal stops are non-strident. In addition, a language such as French opposes distinctively /s/ ~ /k/ as fricative to stop, while redundantly enhancing this distinction with acute (palatal) ~ grave (velar) -- at least in the basic contextual variants of the phonemes. In still other languages, such as Russian, in the non-continuant series -- /p t č k/ -- the distinctive opposition acute /č/ ~ grave /k/ is enhanced by the redundant difference non-strident /k/ ~ strident /č/. This same relation is manifested by the continuants (distinctive acute, redundantly strident /š/ vs. distinctively grave, redundantly non-strident /x/).

There are many systems in which it does not seem that one feature is distinctive and the other is redundant, but rather that the two features in combination give the distinctive difference. Such combinations I will call "syncretisms" -- and the resultant tendency I will call the "tendency for syncretic oppositions". In such cases, for the most part, the tendency is to combine a mark with a non-mark (as seen above), thereby creating the distinctive opposition of a mark to another mark.

For example, if we take the typical 5-vowel system --

i	u
e	o
a	

the high (diffuse) vowels are marked as against the low (compact) vowels. But what differentiates them from each other? In some languages, (e.g., Japanese) the feature is acute~grave (Japanese /u/ often has little or no rounding) -- in which case the acuteness is the mark (the evidence that acuteness is the mark comes from the fact that the unmarked 'a' in such systems is basically a back or central (grave), not a front (acute), vowel -- see Jakobson and Waugh, 1979). In other languages, such as Russian, the relevant opposition is flat~plain (both /i/ and /u/ have front and back variants), in which case flatness is the mark. (Again, the unmarked /a/ is non-flat.) In still others -- and it is difficult to say at the moment how many there are -- neither flatness nor acuteness is the distinctive difference, but rather the relation is between the mark of flatness in the back vowels and the mark of acuteness in the front vowels. The relation /i/ $\approx$ /u/ then is built on the syncretic relation acute $\approx$ flat.² In such cases, we recognize a syncretism of two intrinsically combined features -- flatness with gravity on the one hand and acuteness with non-flatness on the other -- thereby making up a syncretic opposition between the mark of flatness combined with the non-mark of gravity vs. the mark of acuteness combined with the non-mark of non-flatness:

$$\begin{array}{ccc}
 i & \longleftrightarrow & u \\
 \left\{ \begin{array}{l} \underline{\text{acute}} \\ \text{non-flat} \end{array} \right\} & & \left\{ \begin{array}{l} \text{grave} \\ \underline{\text{flat}} \end{array} \right\}
 \end{array}$$

These cases are reminiscent of Trubetzkoy's definition of "equipollent oppositions" as those in which both members are "logically equivalent, that is, they are neither considered as two degrees of one property nor as the absence or presence of a property" (Trubetzkoy, 1939, 1969:75). We have already seen that such a statement cannot hold at the level of the feature -- with each and every feature, it is the case that the two poles are not equivalent. If, however, we turn to the level of the segment -- the phoneme -- then such an observation can have its application. Thus, the syncretic opposition $i \approx u$ can be seen as an equipollent one involving acute $\approx$ flat. Of course, such combinations also maintain maximal perceptual contrast -- for we have, in Trubetzkoy's terms, the optimally grave (or "maximally dark") /u/ vs. the optimally acute ("maximally clear") /i/. Even in those systems like Wichita (Hockett, 1955) where one gets the following sound pattern:

i	u
e	a

and where the relevant oppositions are the mark of diffuseness (/i/, /u/) vs. its absence (/e/, /a/) and the mark of acuteness (/i/, /e/) vs. its absence (/u/, /a/), it is still the case that

enhancing the perceptual contrast. Thus, in terms of basic contextual variants we have the following equipollent relation:

$$\begin{array}{ccc} p^w & \approx & p^j \\ \text{flat} & \longleftrightarrow & \text{sharp} \end{array}$$

whereas in terms of the two phonemes over all contexts, the relation is a privative one: $p^j \sim p$. The interplay between equipollence and privativity seems to be very important for phonological systems. Another manifestation of this interplay comes from the tendency in French for the /t/, /d/ to be dental (non-flat) and the /s/, /z/ to be alveolar (flat) thereby redundantly reinforcing the opposition of stop vs. fricative with flat ~ non-flat. (For a discussion of flat ~ non-flat with respect to alveolar ~ dental, see Jakobson and Waugh 1979). Another very common result of the "tendency to equipollence in basic contextual variants" ties in with examples mentioned above: in languages like English, French, German where the distinctive opposition tense ~ lax is redundantly enhanced by voiced ~ voiceless, the basic contextual variants of the opposition are equipollent: $p \approx b$

tense ~ voiced.

In many cases, it is difficult to decide whether a given opposition is privative or equipollent: of the many 5-vowel systems (/i e a o u/) listed in e.g. Liljencrants and Lindblom 1972, how many are actually built on the syncretic opposition acute ~ flat? In a language like French, which does not have any strident non-continuants (affricates) or non-strident continuants ('weak' fricatives), is the opposition /t/ vs. /s/ privative or equipollent: in other words is it built on either continuant ~ non-continuant or non-strident ~ strident or is it built on non-strident ~ continuant? Much more research is needed into the nature of the contextual variants in order to make a judgment and it may be that different speakers view the relation in different ways. We could also correlate this uncertainty with Jakobson's observation (Jakobson and Halle 1971) that the presence of affricates in a system implies the presence of fricatives (but not vice versa) and that the learning of affricates by children comes after (but not before) the learning of stops and fricatives. Since affricates are for the most part differentiated from the corresponding stops by stridency (but see the discussion on /č/ in Russian above for exceptions to this), this would argue for the use of stridency in the stop/fricative opposition. But whether it is distinctive (privative or equipollent) or redundant is again a difficult question. We need more phonetically-detailed studies of child language in order to provide some answers.

One thing which is also still poorly understood at the moment is the whole problem of the interrelationship of the marks themselves. It seems clear that there is a hierarchy of marks -- in other words, we may paraphrase Greenberg, 1966 and say that 'checkedness is more of a mark than tenseness (in consonantal systems)' -- checkedness is learned later than tenseness, it is

used in a smaller number of systems, it tends to be even less differentiated, etc. In the consonants, continuancy is more of a mark than non-stridency: in those systems in which the stop vs. fricative opposition is an equipollent one, the stops are still more basic in some way, and stops are universal, whereas fricatives are not. In the vowels, nasality is much more of a mark than diffuseness. And so forth. Van den Broecke (1976) has done a first study of such a hierarchy, but much more needs to be done. And it may be that with a better understanding of the notion of hierarchy, the "markedness reversals" discussed above will be better understandable. In conclusion, then, it may be said that everything in language is hierarchized -- that no choices in languages are choices among equals, but rather choices among different weightings, differentially hierarchized units. It is equivalence (relational invariance) which language is built on, not equality.

Footnotes

¹ The following abbreviations will be used here: "~" will indicate that a given relation constitutes an opposition. In such cases, the marked term of the opposition will be given first and will be underlined: e.g., nasal~non-nasal (oral).

² I will abbreviate syncretic opposition with "≈" and underline both members of the opposition since they are both marks.

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PHONOLOGY: AN ALGEBRAIC PERSPECTIVE

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There is at the present time no phonological theory which enjoys anything approaching universal acceptance among professional phonologists. The range of phenomena which must be accounted for by such a theory has not yet been spanned, not by generative or natural phonology, not by autosegmental phonology, and not by any others. Each theory has its attractive properties, but each also produces its own set of anomalies. An eclectic selection of aspects of different theories fails to provide uniform solutions to the variety of real and complex problems the phonologist faces. Such an ad hoc treatment confuses the search for the mental realities underlying human languages, and obscures the deeper search for what are called "linguistic universals". What is required is a theory, a theoretical perspective, that is principled, internally consistent, and workable on a range of sets of data.

Since we can presently make no clear choice among competing linguistic theories, we move a certain class of phonological problems to a new setting, one which we know more about, or a setting in which we know qualitatively different things. Thus we may bring to these problems certain principles and methods which have not been previously seen as relevant. This paper reports one small result of these efforts.

We consider (1) a problem associated with vowel reduction in Russian, and (2) a proposed perspective on any of a class of vowel phenomena of the same kind. We close with a discussion of some implications which recommend this perspective.

I

The Russian language has five vowels, which may be displayed according to Figure 1. The standard view, which is presented in Pulkina (1960:15), among other places, is that the contrasting elements in this set occur only under stress. When unstressed in certain environments, the inventory of contrasting elements is reduced to that shown in Figure 2 with /o/ becoming indistinguishable from /a/, and /e/ from /i/. The /o/ and /a/ are pronounced as /a/ in two circumstances: (1) in pretonic

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syllables after a non-palatalized consonant, and (2) initially. Elsewhere these vowels are pronounced more like schwa - "a very short, weak, central, half-open vowel ..." (Page 15). The result is the triangle in Figure 3. With the first shift, /o/ → /a/, and /e/ → /i/, it seems clear that we have a single process, shown in Figure 4. The second shift seems to be of the same kind and is shown in Figure 5.

Situations of this sort exist in many languages, but they remain quite puzzling. They are so because they seem so obvious and simple: there must be a single, simple process at work. Yet no currently available theoretical device allows us to capture the correct intuition of that single, simple process. Adopting a feature approach makes matters worse, since specification of both origin and target points appears to reflect movement in opposite, rather than in the same, directions. That is, it appears that /e/ moves "up" from [- high] to [+ high], while /o/ moves "down" from [- low] to [+ low]. Ad hoc solutions to widespread problems of this kind are of no theoretical interest. They either complicate the theory or else ignore the relevance of the data. The perspective we offer shows some promise of integrating naturally into linguistic theory, and of having substantially wider application than this paper indicates.

II

We begin with an idea found in the literature, the idea of an acoustic or psychoacoustic space. Entities which we call "phonemes" are arrayed in such a space according to ascertainable principles. The space is structured in terms of classes of elements which we have come to call "features", but in the general case the structures we use here are independent of any particular choice of features. This conceptual framework is implicit in much of the literature in phonology, but we are proposing to take the idea of a space seriously enough that it becomes appropriate to introduce spaces into the set of linguistic entities recognized by a grammar, and to examine the manipulation of the spaces as though they were linguistic processes. The methods we use have been a standard part of the tools of applied mathematics for a very long time, and may be found in any good text in modern algebra.

A

The idea of a space is related to that of a set. Objects are discriminated according to a well-defined criterion - those satisfying the criterion belong to the set and those failing the criterion do not. In practical terms two principal classes of criteria determine spaces. On the one hand, we regard the objects in a space as vectors having magnitude and direction. On the other, we organize the objects in a space on the basis of a relation of nearness. Broadly speaking, the "vector" notion

is an algebraic one and the "distance" notion is a topological one. Ordinary Euclidean space has both kinds of properties. In principle, a distance function need not refer to vectors with magnitude and orientation. Moreover, the essential features of such vectors do not lead inevitably to a notion of distance. Each notion enriches a space in a distinct way. Euclidean space is normally described with reference to a system of linear, orthogonal axes. Each of these in turn is isomorphic to the set of real numbers. Real numbers are linearly ordered, they admit a full complement of arithmetic operations, and they accommodate the need for arbitrarily fine precision. The vectors in Euclidean space can be added together in an orderly way, so that we easily envision transformations of the space which shrink, stretch and rotate all the vectors in the space. (See Figure 12.) A vector in three-dimensional Euclidean space is represented as an (ordered) list of real numbers which relate the vector to the coordinate axes in an exact way. A vector in the plane is represented as a list of two numbers. This rich two-dimensional space provides the framework for our principal observation.

B

The acoustic or psychoacoustic space we identify lies on a sagittal plane dividing a biologically normal human into symmetric halves. The planar region of interest is confined to the oral cavity, although we do not know whether points outside this region are relevant. One coordinate axis is identified with the distinction between high and low vowels, and the other with the distinction between front and back vowels. Any vowel which is essentially characterized in both respects, and possibly others, corresponds to a point in the planar region of interest. By means of an extreme idealization we may identify specific vowels in this planar region as in Figure 6. Each vowel sound is identified with exactly one point in the planar region. We can appreciate why this idealization is extreme. If the speech signals of a particular speaker fitted this model exactly, we would find those signals quite artificial, and would probably conclude that the speaker was really a rather primitive computer.

We are more comfortable with a distribution of points, shown in Figure 7. Here, each acoustic event belongs to a neighborhood of points, and thus is characterized as bearing a distance relation to those other points. Those points occasionally observed to lie outside the neighborhood may be explained with reference to small and inessential transformations of the plane. If the points in this figure have been produced by a single individual, we may be justified in drawing a number of conclusions about the mechanisms which that speaker makes use of in dealing with this class of vowel sounds.

For example, since a specific vowel sound is identified with a reasonably well-defined neighborhood, the underlying mechanism

must be able to deal with abstractions from phonemic events, since the notion of a neighborhood is itself an abstraction. The concept of the vowel sound /u/ is then an abstraction in the mechanism.

Second, since the target of the mechanism is any point in a prespecified neighborhood, that mechanism must be sensitive, in a rule governed way, to other factors which may provide further specificity. Other structures beyond the high-low, front-back planar region must be able to affect the mechanism's activity. Third, the mechanism must be able to deal with the logical requirements of neighborhoods. It must in some sense "know" when two points in the space are "too far apart" or "too close together."

It is not easy to see how this aspect of the linguistic data can be accounted for by a generative process acting on feature specifications. The isolation of well-defined neighborhoods in the space is related to the attempt to identify specific feature contrasts. And the use of the neighborhood concept places allophonic variation near the center of the formal descriptive mechanism. The orderliness of allophonic variation may be characterizable with reference to the interaction of several distinct such spaces.

C

We make a few additional observations. If this particular aspect of linguistic competence is required to be neutral with respect to the speaker/hearer distinction, then the same space is implicated in both recognition and production. The notion of recognition by motor synthesis may profitably be re-examined within this framework. If all human languages exhibit phenomena of this kind, then the ability to deal with spaces in a mathematical sense becomes a candidate for the status of a linguistic universal. Finally, we may raise the question whether the ability to deal mathematically with spaces and their points is an intrinsic characteristic of the species. If we adopt such a Cartesian view, we may then try to understand whether this ability is manifest in non-linguistic ability as well as in linguistic phenomena. The answer to this last question is at hand. Physiologists are well aware of the primitive state of neuro-sensory systems for gravitational orientation. And Gibson (1966) has argued very strongly that sensory systems are precisely "designed" to detect the spatial properties of this gravitational orientation.

We note further that the notion of generativity may not be eliminated from phonology by the adoption of this framework. Points in a space normally behave as though they were selected from a continuum, while a finite inventory requires discrete representation and the manipulation of discrete structures. If

we require the processing of this discrete inventory to be orderly, then the only coherent condition we can place on the mechanism is that its processes be effective, or, in more technical terminology, that it be computable. Insofar as the notion of generativity is indistinguishable from that of effectiveness, we do not see how it can be eliminated.

D

The phenomenon of vowel reduction may be pictured in either of the ways shown in Figure 8. In the first we suggest that two neighborhoods merge into one. In the second we suggest that there is, in some abstract sense, a movement from one neighborhood to another. More specifically, certain distinctions which were represented in earlier figures have disappeared, leaving us with the distribution in Figure 9. We notice that this reduction yields a greater geometric separation among neighborhoods. A system of fine discriminations has been replaced with a simpler system of coarse discriminations. Five neighborhoods have given way to three.

1

We may try to describe this reduction in mathematical terms in at least two different ways. On the one hand we may say that the space itself has been "deformed", that it has shrunk in specified places, and, on demand, can shrink in those places again. It appears that we cannot sustain this interpretation in a sensible way. Imagine that the planar region is a rubber sheet, locally shrunk in two regions, so that the distinctions between /o/ and /a/, and between /e/ and /i/ have been obliterated. We are left with the somewhat disorderly idea that shrinkage occurs locally in the space, leaving the need for an operative principle unmet. And of course, at a more general level, we just might be asked who or what is "looking at" this deformable space!

On the other hand we may express the reduction as a function that maps the whole space to itself in such a way that overall spatial structure is preserved while certain distinctions are eliminated. We note that these spatial manipulations occur in a larger context, already highly organized and explicitly structured in terms of semantic, syntactic and other phonological regularities.

In general we require mechanisms that can deal systematically with the invariance of selected properties under spatial transformations. We must be able to describe how one aspect of a phenomenon can vary in an orderly way while other aspects are held invariant, all without disturbing the structural integrity of the whole. Vowel reduction occurs without destroying the recognizability of the structural context in which it occurs. These, then, are the notions in need of precise definition.

2

Now, a simple rotation of the planar region about its origin accounts for both the reduction of /e/ to /i/ and the reduction of /o/ to /a/. The invocation of vowel reduction may then be theoretically described as the invocation of a certain planar rotation (Figure 10.)

3

a

A more abstract description, more directly in accord with the invariance framework, explains vowel reduction as a "homomorphism" from the space to itself, a mapping which carries both /o/ and /a/ to /a/, and both /e/ and /i/ to /i/. When we say that this mapping is a homomorphism we mean that all other structural properties of the linguistic structure containing these vowels are invariant. Very succinctly, the principal observation of this paper is that vowel reduction is an endomorphism on the high-low, front-back space of vowels. (An endomorphism is just a homomorphism from a space to itself.)

b

An alternative example of a homomorphism may be in order. Consider the set of all symbol strings over the roman alphabet. A proper subset of this set is the set of all strings containing only occurrences of the letter "A". Define a function $\mathcal{F}$ which maps any string whatever to the string consisting of only the letter A, and having the same length. Every string in the original set maps to exactly one string of A's. There is little structural interest in this mapping $\mathcal{F}$. But now, notice that concatenation of strings exhibits a peculiar property under this mapping, as in Figure 11. That is, exactly the same length is determined, for any string in the set, obtained by concatenating others to get it, whether we add the lengths of the component strings before, or after, the application of the mapping $\mathcal{F}$. The mapping $\mathcal{F}$ is a homomorphism under the operation of concatenation. This principle can be given a very general statement. If $*$ is a binary operation, then $\mathcal{F}$ is a homomorphism if for all x and y in the set, $\mathcal{F}(x) * \mathcal{F}(y) = \mathcal{F}(x * y)$. Length is an invariant under the mapping $\mathcal{F}$.

E

We suggest that the notion of a homomorphism is a profoundly important one for linguistic structure, and that the specific application of it to phonological spaces can be used to account for a wide variety of heretofore unexplained phenomena found in phonological data. The proposal to examine cognitive processes from the point of view of their invariants is not new. David Bohm, in an attempt to relate relativity theory to sense perception, cites the broad studies obtained by Piaget's followers

in which they observe that a small child acquires the ability to grant invariance to objects in the external world at a specific point in his/her maturation. It is clearly a question of the first importance to determine whether this ability is guaranteed by innate mechanisms or is acquired from experience. It seems clear that all organisms have this ability, at least relative to some appropriate frame of reference. The proposals implicit in this paper suggest alternative ways to examine this question.

III

More specifically to language, we may consider the role that spaces may play in grammars from a general point of view. It is possible that much of phonology "takes place" in and on spaces, that certain aspects of derivation, of phonological rules, have the form of transformations that manipulate spaces and thereby the arrangement of items in those spaces.

This is an important claim, and it is quite different from the fundamental assumption of any of the kinds of feature phonologies now available. Feature systems operate by noting the presence or absence of certain defining characteristics, called features, in each segment of an utterance. While one can point out that changing values on a list of features can implicitly be viewed as one kind of manipulation of a space, such manipulation has not appeared in the writing of those who developed and now practice feature phonologies.

We recognize that the set of elements which define the spaces remains to be determined. But we may be fairly certain that, of the features so far proposed, only some, if any, are appropriate or "correct". The presently recognized features are too generally tied to phonetic categories which plainly do not behave well in some settings. For example, phonological processes exist, such as "laryngealization" in Afro-Asiatic languages, which have a variety of phonetic renderings. In the Afroasiatic case the term "laryngealization" must cover not only phonetic laryngealization but also such secondary articulations as glottalization and implosion. The category, defining element, or feature - whatever we call it - is not a phonetic one; nor does it have a phonetic connotation (Pia, forthcoming).

B

These notions bring us again to the question of abstractness which has occupied the attention of some linguists for much of the last decade or so. Discussion has centered primarily on the relative remoteness of underlying forms, with Hungarian and Nupe providing many of the data for the debate. The notion of remoteness or abstractness refers to the indirectness of the connection between proposed phonological elements and phonetic manifestations. What is proposed here is a rather higher order

of abstraction than that of remoteness of underlying forms. Indeed we suggest that the elements which define a phonological space are not in any direct way connected with phonetic processes. Instead, the interactions of those defining elements, i.e. points of particular kinds of convergence, include information to which interpretations of a phonetic nature may ultimately be given. By "ultimately" we mean "at the end of a given stage of processing". All this is to say that, except for a scholar here and there (e.g. Foley, 1977), we have not yet begun to speculate at a sufficiently abstract level.

C

We have seen a transformation which manipulates a space. And we know, from studies in mathematics, of a range of transformations that are employed in a variety of mathematical and applied circumstances. Bringing all these together would provide us with a list of possible spatial transformations meeting certain very general and natural constraints. However, that list is not necessarily the same as the list of those which occur naturally in linguistic and perceptual processes. Perhaps the time is drawing near when we may profitably consider whether the objects in the spaces that we need may be defined to be events of a certain class, with some of such events occurring in the oral musculature and in the neural pathways that lead to that system.

To sum up, we have proposed another linguistic universal, namely the algebra of spaces. This algebraic perspective forces us in turn to another definition of linguistics. Indeed, as we see it, that discipline must include concern with human information processing, i.e., with mental activity, at large. Linguistic phenomena have often been considered quite distinctive and independent of everything else. While it is clear that linguistic phenomena constitute a system unto themselves, it is also clear that those phenomena are instances of larger processes widespread in the central nervous system. Adopting this view and taking it seriously can be expected to broaden our linguistic perspective and thereby make for more and more fruitful pathways for research.

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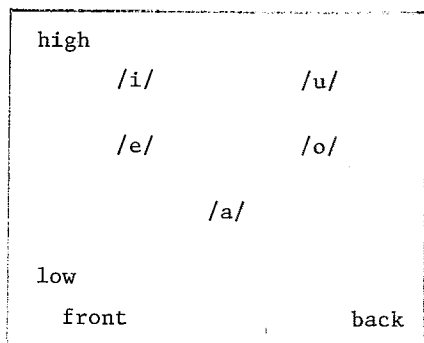


Figure 1

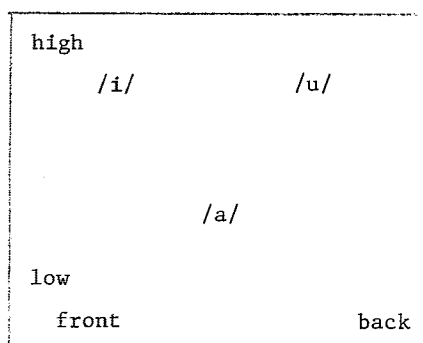


Figure 2

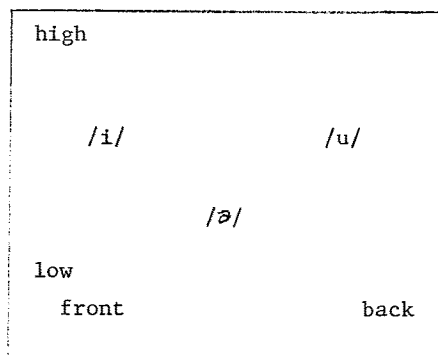


Figure 3

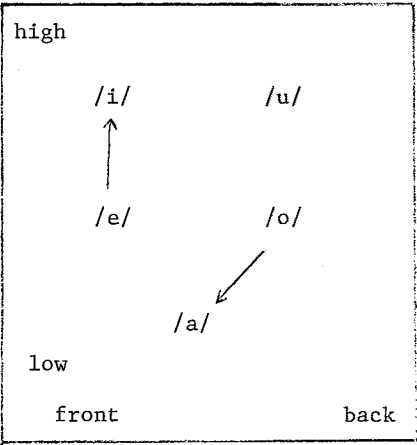


Figure 4

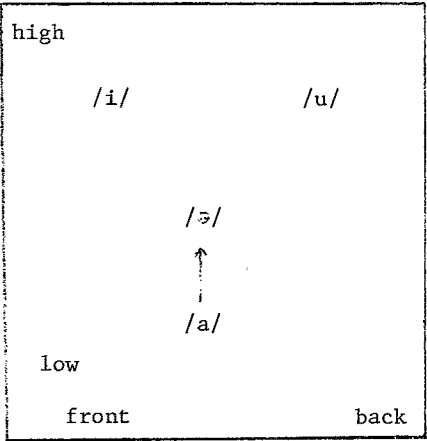


Figure 5

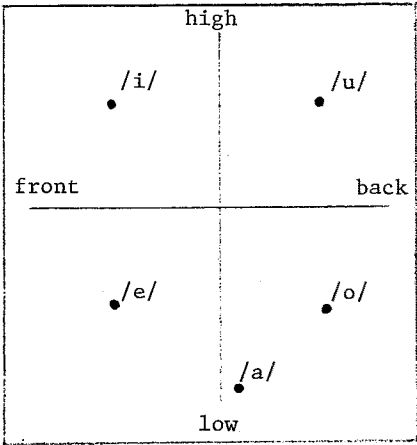


Figure 6

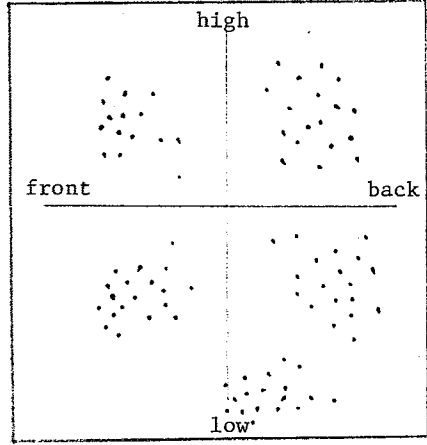


Figure 7

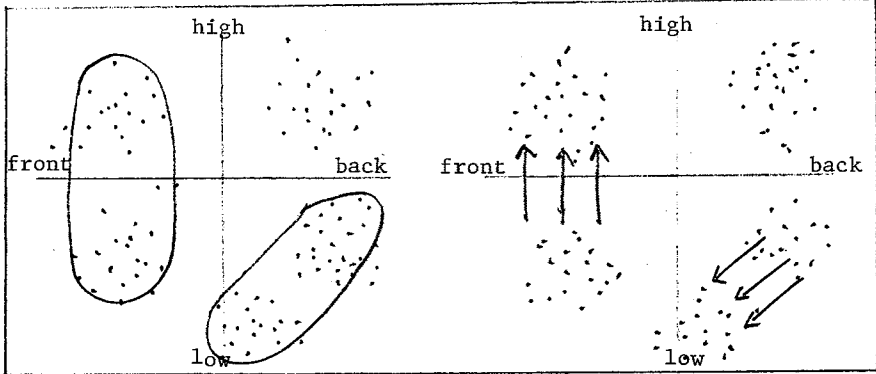


Figure 8

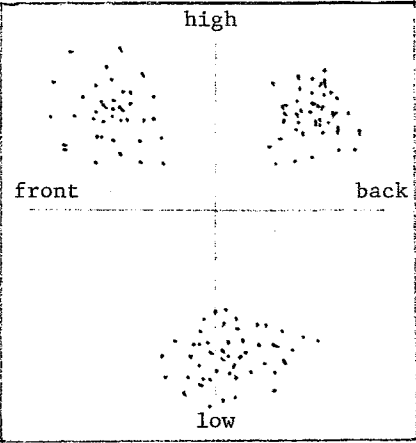


Figure 9

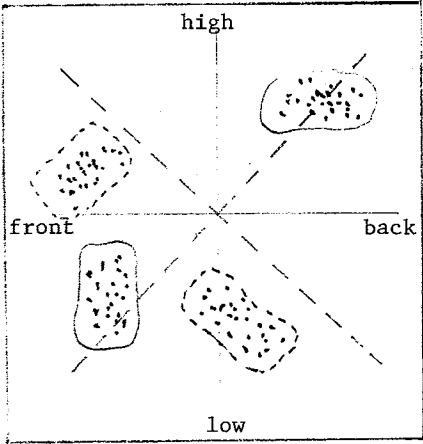


Figure 10

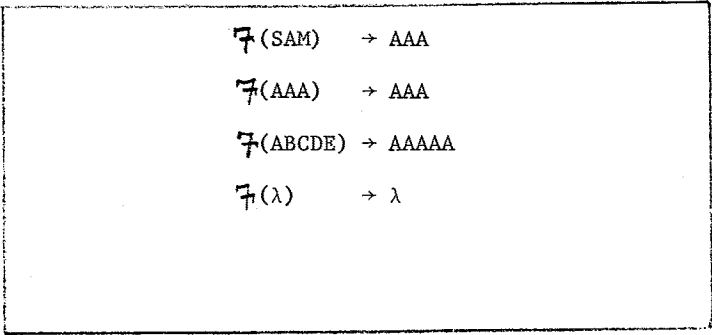


Figure 11

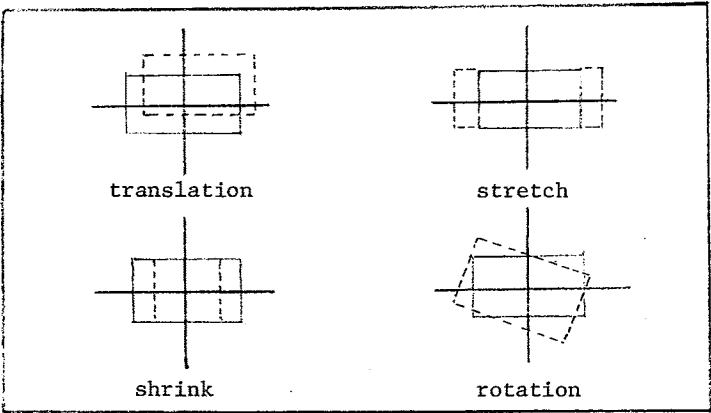


Figure 12

EXAMINATION OF PARALLELS AMONG STRATA
IN ASPECTUAL PHONOLOGICAL THEORY

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Two articles in earlier Forums: Hoffman (1976) and Bergan (1977) discuss three phonological strata in Aspectual theory. These reflect primarily definitional considerations. Smith (1972a) provides a more amplified presentation. Smith (1967) presents the phonological strata within the total Aspectual theoretical framework.

Other sources are available--primarily applications of phonology. Applications to literacy include: Smith and Sustakoski (1964-5), Smith (1968)², and Sustakoski (1969.) Bergan (1972), Mayer (1972), Koekkoek (1972) and Weinstein (1966) consider non-English concerns. Fickett (1970) and Fitzsimons (1973) provide syntactic studies which required prior rigorous phonological analyses. Historical applications include Tow (1976), Smith (1972b), and Woolfson (1967); speech problem concerns include: Oliva and Duchan (1976) and Weber (1967.) Bergan (1978) and Hoffman (1978) explore extensions of the implications of Aspectual theory.

In reviewing Aspectual phonological concepts while studying a social dialect (Hoffman, 1970), I reexamined many details of Aspectual phonology. In this process, I accumulated evidence for systematic redundancy among separate phonological strata. This evidence was largely in the nature of terminology required by distinctions necessary to treat data at each stratum.

¹ The three strata are: phone, phoneme and morphophone. The latter, strictly, is a morphological not phonological stratum but plays a major role in Aspectual phonology. I assume prior familiarity with the terms: phone and phoneme. Morphophone is equivalent in some respects to the Stratificational morphon. In other respects, it resembles what some conventionally term a morphophoneme. The differences between these and the Aspectual use of the morphophone will hopefully become apparent from the ensuing discussion. For a review of the concept, read Austin (1972.)

² Smith, with a varying number of collaborators, also authored a series of Linguistic Readers (1963-8.)

Subsequently, I have explored parallels among regional, situational and phonological conditioning of variation within Aspectual theory. My intent now is to share some results of this exploration; however, I make no claim for an exhaustive presentation. Despite necessary further development and refinement, I intend providing illustration, if not support, for parallelism among Aspectual phonological strata.

Terminology for details of Aspectual phonological theory varies from one version to another over time. I do not limit my use to that of any particular version. Rather, I have chosen eclectically, aiming toward a comprehensible presentation. Scope limits examples to English. Omitted deliberately are the phoneme and morphophone inventories conveniently available in Smith (1967, 1968 or 1972a.)

Phonetic Assignments
(Phones Assigned to Phonemes)

Smith (1968: 92 fn. 28 and 1972: 161-2) and Hoffman (1976: 131-2) distinguish three phone types realizing phonemes: allo-phones, dia-allophones and dia-phones. Allo-phones are binding on all speakers of a language unlike dia-allophones binding only upon speakers of a variety or dialect. Dia-phones are not even binding within a dialect. Figure one elaborates the distinctions.

Figure One

Allo-phones	Dia-allophones (are binding on)	Dia-phones
All speakers (of regional or social varieties and are used in)	Some speakers	No speakers
All language (situations and are distributed non-contrastively)	All dialect	Some dialect
And complementarily with all (of the other phones which realize the phoneme for the)	And complementarily with all	But not complementarily with some
Language	Dialect	Dialect

Note: the three columns from top to bottom will read as three sentences; material in parentheses is common to all three.

Allo-phones are out of speakers' awareness unless they learn other languages or receive special training. Likewise, dia-allophones are out of awareness unless one encounters speakers of other dialects or varieties.

Dia-phones may be in awareness within a dialect-- particularly if selections are socially marked.

Figure two provides single examples for both vo-coids and contoids. Phonetic and phonemic notation fol-lows Trager (1964) and Trager and Smith (1951) or Trager (1972: 23-48.)

Figure Two

Allo-phone

(of /i/)	(of /p/)
[I] before voiceless	[p ^h] initial, before stressed
stops. /bit/ "bit"	syllables. /pet/ "pet"

Dia-allophone

(of /u/)	(of /l/)
[I] before [d ^h] in some	[L] postvocalic in some dia-
dialects but [U] in	lects but [lx] or [l] in
others. /gud/ "good"	others. /bel/ "bell"

Dia-phone

(of /e/)	(of /t/)
[ɛ] or [E] before [ə]	[-t ^h] or [-ɰ] for [l] in
in Buffalo /heht/ "hat"	various dialects. /bohtil/
	"bottle"

Phonemic Contrasts

(Phonemic nuclei are realizations of morphophones seen as lexical contrast makers.)

Phonemes within Aspectual theory are not all equi-valent in function. Those which realize morphophones function primarily as lexical contrast makers. Others are requirements of the phonotactics in a dialect or variety. Still others have a likely situational or social function. Aspectual theory, additionally, distinguishes three types of phonemes which all express lexical contrasts: principal variants, secondary variants and co-variants.

Principal variants realize primary lexical con-trasts binding upon almost all dialects and varieties of the language.³ This "common core" characteristic of the morphophone inventory realized by principal vari-ants leads to a common misunderstanding. Students e.g. often assume that inter-dialectal comparisons esta-blish the language's morphophone inventory. The deter-mining criteria, however, are phonological.

³ Smith (1967: 313-4) finds several Northern British dialects lack one primary contrast while some Canadian and New England dialects lack another.

For any given dialect, an investigator determines the inventory of morphophones by the number of contrasts available in pristine environment.⁴ An individual dialect's inventory, thus established, either matches or approximates the "common core" inventory of the language's shared lexical contrasts. The phonemes expressing contrasts in pristine environment are called principal variants, and they are binding on nearly all speakers.⁵

Secondary contrasts are mandatory for particular dialects, not the whole language, which occur in non-pristine environments. The phonemes realizing such secondary contrasts are called secondary variants.

Tertiary contrasts are non-pristine environment contrasts whose occurrence is optional within a dialect or even for a single speaker. Phonemes realizing tertiary contrasts are called co-variants.⁶

⁴ Smith (1967: 312-3; 1968: 23-4; and 1972a: 168-70) defines pristine environment for English vowels as monosyllabic words ending in voiceless stops. Smith (1968: 32-3) defines pristine environment for English consonants as consonants making contrasts initially, medially and finally in the dialect. Hoffman (1970: 17) suggests pristine environment for English consonants may be no more than prevocalic, utterance-initial. Whether pristine environment is English-specific or universal, or what pristine environments might be for other languages, remains an open question. However, this question is addressed, for German at least, in Mayer (1972: 244-5) and Weinstein (1966: 91-96.)

⁵ Binding means that a principal variant must realize a primary contrast although the particular phonemic realization may differ for any dialect. Smith (1972a: 1967) gives an example, the principal variant of *aw*., the primary contrast maker in "out" and "house." Smith lists the realizations: /aw/, /æw/, /əw/ and /ew/ as the principal variants respectively for Cleveland, Philadelphia, Toronto and Richmond.

⁶ Smith contends that phonemes realizing tertiary contrasts are always assignable to two morphophones. For example, /ɪ/ may realize *i*. in some speakers' "this" or "children" as well as *ə*. as in some speakers' "just"(av) Likewise, /ʒ/ may realize *ž*. in some speakers' "Zhivago" or "Zhukov" as well as *j*. in some speakers' "rouge." I am not convinced that this need not always be the case however.

Figure three represents this information in a form more compatible for comparisons.

Figure Three

Principal Variants realizing primary contrasts	Secondary Variants realizing secondary contrasts (are binding on)	Co-variants realizing tertiary contrasts
Nearly all speakers (of social or regional varieties and are used in)	Some speakers	No speakers
Nearly all language	All dialect (situations and occur in)	Some dialect
pristine environment	non-pristine environment	non-pristine environment

In figure four, a single example occurs for both vowels and consonants. Periods following phonological representations indicate morphophones.

Figure Four

Principal Variant

(of i.)	(of f.)
/i/ for most dialects, /ɪ/ for some N.Z. speakers. p.i.t. /pit/ "pit"	/f/ for all dialects. f.i.l. /fil/ "fill"

Secondary Variant

(of eh. in contrast with æ.) /eh/ or /əh/ contrasts with /æ/ in the Northern and Southern Atlantic Seaboard. Thus, k.æ.n. /kæn/ "can" (v) contrasts with k.eh.n. /kəhn/ or /kehn/ "can" (n)	(of ŋ. in contrast with n.) /ŋ/ contrasts with /n/ in most dialects of the United States excluding some in the North East. Thus, s.i.n. /sin/ "sin" contrasts with s.i.ŋ. /siŋ/ "sing"
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Co-Variant

(of ə.)	(of j.)
In many dialects, /jəst/ or /jɪst/ may realize j.ə.s.t. "just" (av) However, only /jəst/ occurs for j.ə.s.t. "just" (aj). Therefore, only <u>sometimes</u> is a contrast present.	In many dialects, /beyʒ/ or /beyj/ may realize b.ey.j. "beige." However, only /eyj/ occurs for ey.j. "age." Compare also "rouge" and "garage" to "language" and "bridge." The former group may or may not contrast finally with the latter.

Phonemic Gain

(Non-morphophonemic realizations occur in certain restricted environments, which realizations are non-lexically contrastive for the language)

Aspectual theory uses three terms for certain non-morphophonemic occurrences of phonemes: essential gain, excremental gain and epenthetic gain. Their occurrence is in non-pristine environment, and they are non-lexically contrastive. Unlike previous cases where phonological considerations are paramount, here inter- and intra-dialectal ranges of occurrences account for the terminological distinctions. Figure five represents these relationships.

Figure Five

Essential Gain	Excremental Gain	Epenthetic Gain
	(is binding in occurrence for)	
Nearly all speakers	Some speakers	No speakers
(of social or regional varieties and is used in)		
Nearly all language	All dialect	Some dialect
(situations and occurs in non-pristine environments.)		

Figure six represents examples for both consonants and vowels. Underscores indicate the gain.

Figure Six

Essential Gain (Nearly all dialects require the gain, but the specific phoneme gained may vary interdialectally.)

f.a.ð.r. /faðir/ or l.o. /loh/, /loh/, /law/,
 /faðer/ "father"; b.æ.t.l. /læw/ "law"; p.a. /pah/,
 /bætl/ or /bætl/ /pah/, /paw/, "pa" (the latter two phonemic expressions
 may also have come from p.o. and, in either case,
 have an orthographic representation: "paw.")

Excremental Gain (Some dialects require gain where other dialects do not.)

f.i.l.m. /filim/ "film"; k.y.u.w.b.ə. /kyuwbər/ "Cuba";
 f.a.y.r. /fayir/ unlike æ.k.r.o.s. /ækrəhst/
 dialects with /fahr/ "across"; w.o.s. /woys/ or
 "fire"; p.u.w.r. /puwir/ /wohrs/ "wash"; w.a.r.m.θ.
 unlike dialects with /warmθ/ "warmth"; b.e.g.
 /puhr/ "poor"; p.o.w.s.t.z. /beyg/ "beg"
 /powstiz/ "posts."

Epenthetic Gain (Some speakers have optional gain.)

f.o.w.r. /fohr/ or /fowir/ s.o. /soh/ or /sohr/ "saw";
 "four"; p.e.y.l. /peyl/ or s.t.r.e.ŋ.g.θ. /streŋθ/ "strength."
 /peyil/ "pail." or /streynθ/ "strength."

Other kinds of gain and a set of reverse phenomena called loss are omitted for the sake of scope. I move now to a discussion of morphophone alternations. In Aspectual theory, not only do phones and phonemes alternate but also morphophones.

There are three types called respectively: substitution, replacement and alteration. Although morphophones are primarily lexical contrast makers, most alternations of morphophones do not result in lexical contrasts. This will become clearer from the examples.

Substitution

Comparisons among dialects for the morphophone constituency of lexical items, as seen through their phonemic realizations, leads to certain expectations. These expectations depend on an analysis and a supposition. The analysis required is that of the phonemic realization patterns and distributions for morphophones in a given dialect. The supposition is that morphophones are generally contrast makers for the language as a whole. Consequently, after a dialect's phonemic and morphophonemic analysis, investigators usually expect to predict realizations for any given lexical item. However, in various dialects, realizations of morphophone units occur contrary to that expectation. When this happens, the unexpected morphophone's occurrence is termed substitution.

Unlike the triple groupings used in previous sections, substitutions occur only in the latter two categories. A substitution in the lexicon for the language as a whole would be a diachronic not synchronic matter. Further, should most and not all dialects undergo such a substitution, the perspective would reverse. That is, the newer unit would be part of the normative structuring for the lexical unit in the language as a whole. Consequently, the original morphophone would constitute the substitution from a synchronic viewpoint.

Figure seven indicates a distribution between replacements required by a given dialect as opposed to those optional within a dialect. No terminological distinctions between these are sharply drawn. I append merely descriptive terms to vocalics and consonantals.⁷

7

The terms: vocoid and contoid, vowel and consonant, vocalic and consonantal have been undefined although illustrated by example. Each pair refers respectively to phones, phonemes and morphophones. The term realization has been used both for phonemes and morphophones to simplify the presentation. Aspectual use has phones actualize phonemes, and phonemes express morphophones.

Figure Seven

*8

*

Inter-dialectal Substitutions

d.yuw. (uw.) "due"	c.i.m.n.y. (l.) "chimney"
/duw/ not /dyuw/; p.e.n.	/cimliy/ not /cimniy/;
(i.) "pen" /pin/ not	r.i.n.s. (š.) "rinse" /rins/
/pen/9; m.i.l.k. (e.)	not /rins/; h.ay.t. (θ.)
"milk" /melk/ not /milk/.	"height" /hayθ/ not /hayt/.

Intra-dialectal Substitutions

iy.š.r. (ay.) "either"	f.i.f.θ. (t.) "fifth" /fifθ/
/iyšir/ or /ayšir/;	or /fift/; t.o.k.i.n. (ŋ.)
g.e.t. (i.) "get"	"talking" /təhkiŋ/ or
/get/ or /git/; k.r.i.y.k.	/təhkin/; l.i.y.z.yuw.r. (e.)
(i.) "creek" /krik/ or	"leisure" /liyžuhr/ or
/kriyk/.	/ležuhr/.

An important caveat is necessary to mention. The boundary between these two groupings is very nebulous. Some speakers may be bound to a substitution while others may exercise an option.

The Morphophone is not quite a Morphophoneme

At this point, it is most convenient to distinguish morphophones from morphophonemes. When discussing principal variants of primary contrasts, I did not discuss the concept of conditioned variation. Morphophones, expressed by their principal variants in pristine environments, are also expressed by conditioned variants in other phonological environments. I will not discuss conditioned variation in this presentation. I will limit my comments on conditioned variation to the following. Phonemes, expressing morphophones in restricted phonological environments, correspond to earlier notions of phonological conditioning of phonemes realizing morphophonemes.

The next type of alternation discussed, replacement, is the alternation of morphophones in specified morphemic environments. This corresponds to earlier concepts of phonemes alternating in morphemic environments. However, in Aspectual theory, such alternation is considered at the morphophonetic not phonemic stratum.

8

Asterisks indicate the missing portion of the usual triple grouping.

9

The emphasis on individual items does not mean ignoring phonologically fostered environments for substitutions. Examples include: i. for e. before nasals, ow. for uw. before r. and uw. for yuw. before apicals etc.

Replacements

Replacements occur in the environment in the environment of paradigmatic and derivational affixes and some occur in nearly all dialects of the language. Others are limited to certain dialects. Replacements also may or may not be used by the same speaker.

Unfortunately, determining whether the latter involves a choice between dialects or within one is difficult--particularly with socially diagnostic replacements. Therefore, I will give the same examples for the latter two categories without distinction in figure 8.

Figure Eight

Replacements (for all or almost all the language)

r.ay.d. (ow.) /rayd/,	s.e.n.d. (t.) /send/, /sent/
/rowd/ "ride", "rode";	"send", "sent"; b.æ.θ. (ʒ.)
f.u.t. (iy.) /fut/,	/bæθ/, /beyʒ/ "bath", "bathe";
/fiyt/ "foot", "feet";	w.ay.f. (v.) /wayf/, /wayvz/
ʒ.ey. (e.) /ʒey/, /ʒem/	"wife", "wives."
"they", "them."	

Replacements (for some dialects of the language)

d.ay.v. (ow.) /dayv/,	g.r.iy.s. (z.) /griys/,
/dowv/ "dive", "dove";	/griyz/ "grease" (n),
h.e.l.p. (ow.) /help/,	"grease" (v); h.u.f. or
/howlp/ "help", "holp";	h.uw.f. (v.) /huf/ or /huwf/,
k.l.ay.m. (ə.) /klaym/,	/huwvz/ "hoof", "hooves"
/kləm/ "climb", "clum."	m.o.θ., m.a.θ. (ʒ.) /mʌθ/ or
	/maθ/, /mʌʒz/ or /maʒz/
	"moth", "moths."

Replacements (which are optional within a dialect) may include some of the above.

Alterations

Alterations, a special group of morphophonetic alternations, do not contribute to the parallelism under discussion. I touch upon them only for purposes of comparison with substitution and replacement. Alterations, binding on nearly all speakers of the language, are often reflected in orthography unlike substitution. They occur in the morphophonetic environments: y., i., or ay. and--like replacements--function in a limited number of lexical items.

I will not devote a figure to them, but I will merely list examples in orthographic representation. Examples include: "extreme, extremity"; "sane, sanity"; "sublime, sublimity"; "opaque, opacity"; "contrite, contrition"; "divide, division."

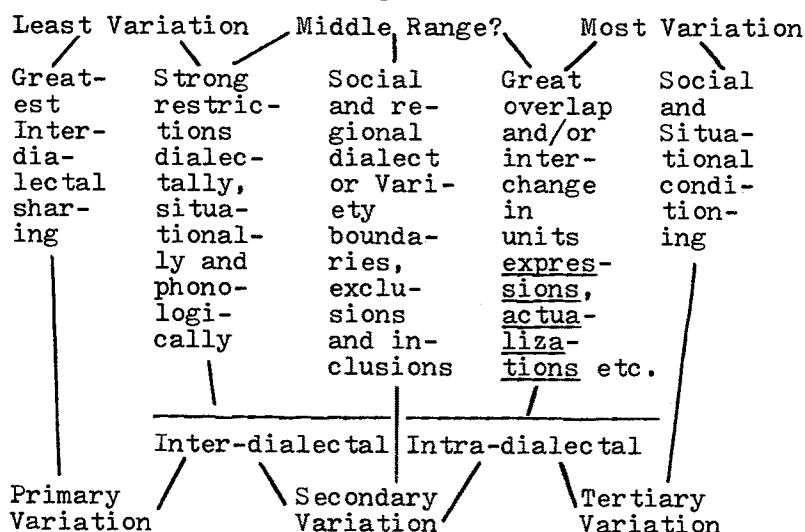
Distinctions among phone, phoneme, morphophone, phone types, contrasts, alternations etc. all serve a descriptive and dynamic system encompassing, organically, interrelationships among:

1. Non-contrastive, contrastive, and underlying phonological entities;
2. Social, regional, historical and situational phonological variation; and
3. Non-linguistic as well as linguistic conditioning of phonological variation.

I contend that current Aspectual terminology reflects a necessity to distinguish three degrees of variation for analytical purposes. Further, these distinctions are apparently necessary at all phonological strata in the system.

I term these necessary analytical distinctions: primary, secondary and tertiary variation. My last figure, figure nine, suggests definitions in focus if not in kind.

Figure Nine



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APPROACHES TO MORPHOPHONEMICS IN THE ASPECTUAL MODEL

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Given the complex intertwinings of phonemes, morphemes and morphophones in the Aspectual model, one might ask where morphophonemic variation is accounted for within this system. In this paper I hope to explain how and why morphophonemics are treated by examining two possible approaches which suggest themselves from within the confines of the theory itself. The data I will present in conjunction with this explanation are meant to be illustrative, not exhaustive. For this reason, I will limit myself to the analysis of some English plurals.

A proper treatment of English plurals must account for those changes which are restricted to specific morphemes such as OX/OXEN, DATUM/DATA, and MAN/MEN as well as for those plurals whose forms are conditioned by the final phoneme of the base such as CAT/CATS, DOG/DOGS, and CHURCH/CHURCHES. The former irregular forms involve changes in structure, a fact which should be reflected at the morphophonemic level. The variation of the latter regular forms is usually describable solely in phonological terms. Curiously, how to describe the straightforward phonological conditioning is what is not obvious in the Aspectual model.

A brief background explanation of Aspectual phonology is probably necessary at this point.[1] "Aspectual Linguistics" is the name applied to the contemporary school of thought which represents the continuation of the work of Trager and Smith first presented in the OUTLINE OF ENGLISH STRUCTURE. In this model, an inventory of phonemes drawn from all dialects and expanded by their combinations is known as the "overall pattern".

i i u	ii uu	iy iy uy	iw iw uw	ih ih uh
e ə o	ee oo	ey əy oy	ew əw ow	eh əh oh
æ a ɔ		æy ay ɔy	æw aw ɔw	æh ah ɔh

THE OVERALL PATTERN

(Trager and Smith, 1951,
with Smith's unpublished additions)

From the overall pattern, each dialect uses as syllabic nuclei a subset of the nine simple, four geminated, and twenty-seven glide combination vowels. No one dialect uses all forty possibilities.

Many of these nuclei, while contrastive when viewed

within the phonological system of a particular dialect, are functionally equivalent when seen from the standpoint of the lexicon of the English language as a whole. Those phonemes for which patterns of correspondence can be established, such as /aw/ (Buffalo), /əw/ (Toronto), /æw/ (Philadelphia), and /ew/ (Charlottesville) in various pronunciations of the words HOUSE, MOUSE, and LOUSE are said to "calibrate" through the units known as "morphophones" (Smith 1967:311). [2] The morphophones of a language are the basic contrastive units needed to maintain the integrity of the lexicon.

Because of the presence of the morphophone units, the fact that phonemes do correspond to one another in lexical items drawn from many dialects can be captured. A question then arises: Do morphophonemic alternants correspond to one another in the same way? That is, when we say that the phonemic nuclei /æw/ and /aw/ correspond to one another in different dialects, we claim that they are equivalent expressions of the same morphophone unit in the lexical morpheme HOUSE. We find other morphophone units in a similar manner, as we establish the inventory of morphophones for each dialect based on the contrasts maintained there. Now when we consider the forms of the plural suffix, we wonder if it is proper to say that since /s/ and /z/ and /əz/ correspond to one another as equivalent variants of the plural morpheme, they too are equivalent expressions of the single morphophone unit z. which structures this grammatical morpheme. Alternatively, we can argue that since /s/ and /z/ are contrastive in all dialects, they must be expressions of separate morphophones s. and z., each structuring a different allomorph of the plural.

Let us call these two approaches to morphophonemics Proposal One and Proposal Two. They differ in the following way: Proposal One would place all the productive allomorphs of the plural into a morpheme represented by a single morphophone unit, perhaps z.. Proposal Two would have each allomorph structured with different morphophones. For the word DOGS, both approaches yield the same analysis, d.o.g.z.. For the word CATS, however, the analyses would differ: Proposal One would produce k.æ.t.z. while Proposal Two would yield k.æ.t.s. from the same phonemic material, /kæts/.

Proposal Two is attractive because it gives us an allomorph closely allied with the ultimate surface form, while Proposal One gives us a more abstract underlying form which is common to all allomorphs. The major argument for Proposal Two is the fact that s. and z. are clearly separate morphophones, due to the presence of such minimal pairs as SUE/ZOO and HISS/HIS. It therefore seems logical that the proper assignment of any /s/ or /z/ should be to their respective morphophones, and not both

to the same one. This in fact would be the only possible description were it not for overlap within the system. Actually, it is not uncommon to find a phoneme assigned to more than one morphophone unit. This for example is the case with the phonemic sequence /ew/ which is assigned to the unit in OAT in the London dialect although it is assigned to the unit in OUT in Charlottesville (Smith 1967:312). In cases of overlap, lexical contrast is always preserved; the speaker who says /ew/ in OAT will not also use that nucleus in OUT. Since overlap clearly occurs in instances of this type which involve lexical morphemes, it must also be considered plausible for grammatical morphemes.

The fact that overlap exists in the system merely points to the conclusion that both Proposal One and Proposal Two can be justified. But a more serious problem besets Proposal Two. That is, the selection of the allomorph /s/ or /z/ is dependent upon the final phoneme of the base. Yet, Proposal Two would claim that the morphophone s. or z. is first selected and then expressed by /s/ or /z/ accordingly. This presupposes a method of selection of an allomorph which is dependent upon a phonological content for the morphophone. While Smith has stated that there is a "phonological basis—phonetic and phonemic—for the morphophone" (1972:157), it is my position that the phoneme and the morphophone cannot both be defined in terms of phonological features (Savitt 1975: 148-9).[3] And if the phoneme is to be characterized phonologically, then the morphophone must be bereft of phonological content. In keeping with a non-phonologically defined morphophone, if Proposal Two were correct, then the selection of s. or z. would have to be determined in the lexicon for each and every stem, a highly implausible explanation for a productive affix.[4]

The unacceptability of Proposal Two leaves us with Proposal One, where all the productive allomorphs are in fact represented by a single morphophone unit. Because the basis for the selection of allomorphs is phonological and not lexical, only the productive or one of the non-productive morpheme members of the macromorpheme /PLURAL can be selected by the stem. Following Proposal One, which is in fact Smith's analysis (1967:336-7), first the stem is combined with the appropriate regular or irregular morpheme, and then the proper allomorph appears after this morphophonetic structure is expressed in the phonemes of a particular idiolect. At that time, the final phoneme of the base will be able to control the proper allomorph, be it /s/, /z/, or /əz/.

Each lexeme which requires an exceptional plural form must be so marked in the lexicon, but with this analysis, no markings are needed for the majority of the nouns. Highly irregular forms undergo substitutions within their

bases if necessary; GHILD will substitute i. for ay. with the addition of the plural, and the plural morpheme selected will also be an irregular one. These are structural changes, and they occur at the morphophononic level. They are subsequently expressed normally in phonemes. In this manner, the mechanisms of Proposal One are able to handle both regular and irregular forms while maintaining the differences between them, whereas Proposal Two is unable to do this.

Thus we see that of the two options available within the Aspectual model, only one captures the essence of morphophonemic alternations, both regular and irregular. At the structural level, morphemes appear in their morphophononic form. Either the productive morpheme or any one of the irregular morphemes is selected by the base, which may undergo structural changes itself accordingly. Then the morphophononic structure is expressed phonemically. At that time, the allomorph which is required by the phonological shape of the stem is automatically determined. The morphologically dependent processes are thus decisively separated from those which are phonologically dependent, and a satisfying description of morphophonemics is made available.

NOTES

[1] For a fuller explanation of the development of the Aspectual model from the earlier Trager/Smith theory, see Savitt (forthcoming in WORD).

[2] Morphophones are established even if the match is one of sameness, as is the case for most of the consonants, since their basis is functional contrast within the dialect and not mere equivalence.

[3] Smith never stated that the morphophone had phonological features, nor that it didn't. He did claim that each morphophone had at least one phonemic expression that could not be assigned to any other morphophone unit (1972:168). But this may not be true in the case of the consonantals when overlap is considered, for when /s/ is assignable to z., what unique phoneme is left for s.? Furthermore, even if features could be extracted from the phonemes assigned to each morphophone, it would be pointless to do so. A morphophone is a unit which permits the equation of phonemes, not one from which they are generated. If the morphophone did in fact have phonological features, it would be related to the phoneme in the same way the phoneme is related to its allophones, that is, by shared features. That would mean that there was only a single relationship in the system--one of form--to the exclusion of the one of function, and the separation of three units, phone, phoneme, and morphophone, would be unjustifiable. In contrast, with the phone/phoneme relationship one of form and the phoneme/morphophone relationship one of function, such a separation is merited.

Bergan would appear to agree with this interpretation when he says that the morphophone "is not a sound unit but a purely contrastive unit, whose phonological expression is not specifiable in terms of the unit itself" (1977:581).

[4] But not at all implausible for relic and other unproductive forms.

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VOWEL NASALITY: THE CASE OF PORTUGUESE AND GUARANÍ¹

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1. Introduction

Portuguese and Guaraní nasal vowels (NV) have always attracted the attention of phonologists. Among others, Câmara (1953), Back (1973) and Mira Mateus (1975) have studied Portuguese NV. Guaraní NV have been studied by Caballero (1911), Gregores/Suárez (1967: 65-69, 84), Lunt (1973) and Rivas (1974).

It is the purpose of this paper to show that although NV are phonemic in both languages, there is a great difference between vowel nasality in Guaraní and Portuguese. Finally, we will see that only a linguistic model which allows for an examination of data at several levels - in the present case three and not just two - is capable of describing such a situation.

2. Vowel nasality

2.1 Guaraní

In the following paragraphs I will present arguments for the interpretation of Guaraní NV as phonemic / $\tilde{V}$ /.

Oral and nasal vowels contrast in the same (or in similar) environments. There are several minimal pairs and quasi-minimal pairs:

(1) [ku'ʔa]	'half'	[ku'ʔã]	'palate'
[tu'pa]	'bed'	[tũ'pã]	'god'
[ʃe]	'I'	[sẽ]	'to get out'
[te'i]	'facultative suffix'	[te'ĩ]	'finally'
[aba'ti]	'maize'	[pẽ'tĩ]	'tobacco'

Unlike other languages such as Portuguese and French, Guaraní has the same number of oral and nasal vowels. There is therefore a one-to-one relation between nasal and oral vowels.

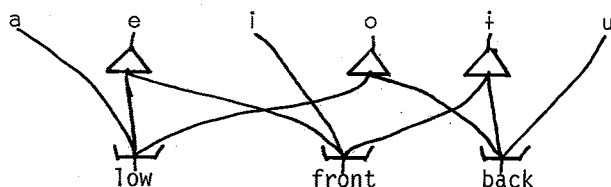
The stressed NV project their nasality onto the other vowels (and consonants, except for obstruents) of the word resulting in a kind of "nasal harmony".

The Guaraní syllable structure is always CV. If we interpret a phonetic nasal vowel as a phonemic oral vowel followed by consonantal nasal segment (VN) we would have syllables of the form CVC.

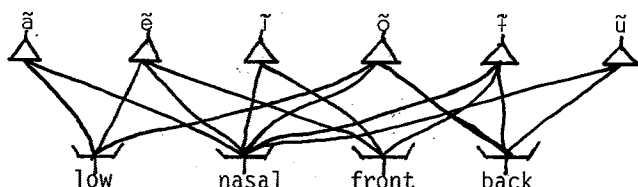
There are no alternations $\tilde{V} \sim VN$ such as we find in French and Portuguese.

The Guaraní vowel system is therefore the following:

(2) (a) oral vowels



(b) nasal vowels



(at the top of each diagram we have phonemes, at the bottom components = phonons)

The above analysis is possible if we assume the following facts:

1. All front vowels are unrounded ($\underline{i}$, $\underline{e}$) but not all unrounded vowels are front ($\underline{\text{ɨ}}$ = high, back, unrounded);
2. $\underline{a}$ is unmarked for place of articulation but marked for height;
3. Because of 2. we can consider $\underline{a}$, along with $\underline{e}$ and $\underline{o}$, as low and leave $\underline{i}$, $\underline{\text{ɨ}}$ and $\underline{u}$ unmarked for height.

The strongest arguments for this analysis are those concerning syllable structure and absence of alternation. In fact, if there is no alternation between $\tilde{V}$ and VN and if there is no syllable structure other than V and CV we can conclude that NV must be interpreted as $\tilde{V}$ even at the morphonic level. One of the arguments for deriving NV from "underlying" VN is alternations like $[f\tilde{r}] \sim [fi'nal]$, $[ir'mã] \sim [irma'nar]$ in Portuguese.

The "underlying" forms postulated by Lunt (1973: 136) are unacceptable. That is, the interpretation of NV as "underlying" oral vowels occurring in a "nasal span", so that a word like $[pẽ'tĩ]$ would be represented as $/peti^N/$, is more complicated. Nasal harmony is a facultative phenomenon among vowels, not an obligatory one. When NV occur they are obligatory only on the stressed syllable. Lunt noted this in a footnote, but all his conclusions depend on the distinction "oral/nasal span". His analysis ignores the hundreds of contrasts that occur in the language, as those in (1) above. In other words, the phonemic level is also part of language structure.

2.2 Portuguese

The structuralist Câmara (1953: 89-97) analyzed the Portuguese NV as phonemic VN. They have been given the same interpretation by Reed/Leite (1947: 194-202), Morais-Barbosa (1962: 691-709), and others. The constructuralists Back/Mattos (1972) and Back (1973), on the other hand, analyzed them as phonemic / $\bar{V}$ /.

We can present a number of arguments for both the "biphonemic" and the "monophonemic" interpretation of Portuguese NV. However, I will present arguments only for the latter. For the former see Câmara (1953: 89-97) and Morais-Barbosa (1962: 691-709).

In the first place, the Portuguese NV contrast with oral vowels in all positions (initial, medial and final, stressed and unstressed). Examples:

(3) anta	[$\bar{a}$ ta]	'a kind of animal'
ata	[$\bar{a}$ ta]	'proceedings'
pa	[$\bar{p}$ a]	'shovel'
Pã	[$\bar{p}$ ã]	'Greek deity'
lima	[$\bar{l}$ ima]	'lime'
ímã	[$\bar{l}$ mã]	'magnet'
lançar	[lã'sar]	'to throw'
laçar	[la'sar]	'to lasso'

Secondly, there is no nasal consonant segment after word-final NV when they are followed by a word beginning with a vowel as in [$\bar{i}$ r $\bar{m}$ ã $\bar{v}$ a $\bar{l}$ miga] (friendly sister), although Almeida (1976: 364) observed it in European Portuguese. Even in this case it would be a transition sound (see Câmara 1953: 90).

Thirdly, the only consonants that occur in syllable-final position are /r/, /s/, and in some dialects /l/.

The fourth and strongest argument against the "biphonemic" interpretation is that it would complicate the description of the syllable structure of Portuguese. The codas of Portuguese syllables have only one consonant, i. e., there is no cluster in this position. The analysis of NV as phonemic /VN/ would violate this rule of Portuguese syllable structure, giving results as maças [$\bar{m}$ a'sans] (apples), as in Câmara (1953: 92-93).

We must, therefore, consider Portuguese vowel nasality as phonemic. Otherwise it would be impossible to account for the productive nasal/oral contrast exemplified in (3). The complete system of Portuguese vowel phonemes is therefore the following:

(4) (a) oral vowels

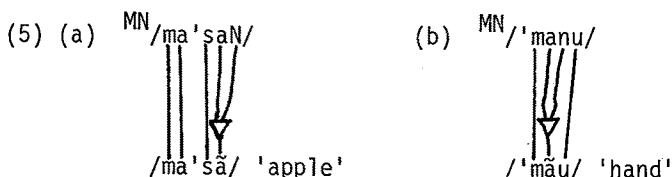
i u
e o
ε ɔ
a

(b) nasal vowels

ĩ ã
ẽ õ
ã

Having considered Portuguese NV as separate phonemes, how could we explain alternations such as [$\bar{f}$ ĩ ~ fi $\bar{n}$ al] (end, final), [$\bar{s}$ ã ~ sani $\bar{d}$ adi] (healthy, health)? They are very frequent and

productive. In stratificational grammar they are very easy to explain because above the phonemic level there is the morphonic (roughly the traditional "morphophonemic"). At this level it is reasonable to consider the phonemic NV as a sequence of "oral vowel" and "nasal consonant". This interpretation accounts not only for the phonemic structure of the language - at the level of contrasts -, but also for the "underlying" morphonic representation of the several morphemic alternants. The morphonic sequence VN has a portmanteau realization² at the phonemic level (or at the level of phonemic signs because this kind of realization occurs only between phonemes and phonemic signs). Below I represent this realization informally:



(The last line represents phonemes or phonemic signs, depending on the interpretation of the theory).

That is to say, with the separation of levels of stratificational grammar we can give a realistic account of both problems: one morphonic, the other phonemic. At the latter level the Portuguese NV are really P/Ṽ/.

The above analysis is not like deriving "surface segments" from "systematic phonemes". The last line is phonemic. Only below it there are the "surface" phonetic realizations (not shown here).

That is, I think, a cognitively realistic interpretation of Portuguese vowel nasality. Otherwise the contrasts shown in (3) would remain ignored.

3. Concluding remarks

Recapitulating, in Guaraní the NV are unitary not only at the phonemic level, but also at the morphonic one, whereas in Portuguese they are so only at the phonemic level. In other words, in the former language there are no alternations that permit the postulation of an abstract VN form. In the latter language, however, it is convenient to postulate this VN sequence at the morphonic level in order to account for the alternating forms of morphemes. At the phonemic level, however, both languages have nasal vowels.

The phonemic status of Guaraní NV is more transparent than that of Portuguese. The task of the theory in this case is to enable us to show at what level (or levels) of language structure vowel nasality is pertinent. Only a linguistic model that recognizes that language is stratified can elucidate this problem.

NOTES

¹ I am indebted to A. Almeida, D. Bennett, G. Heike, R. Schreyer, U. Stephany, and H. Vater for their comments on an earlier version of this paper. The responsibility for its content is mine alone. R. Barron corrected it stylistically.

² David Bennett (personal communication) is of the opinion that it is better not to use the designation "portmanteau realization" here, since we can recognize both the vowel and the nasal element in P/V/. That is, it is different from English "worse" as a realization of both "bad" and "comparative". Nevertheless, I think I can interpret it as portmanteau because (a) the vowel and the nasal element are not linear but in an unordered bundle of phonons, (b) even if we consider them as a linearly ordered sequence of oral vowel plus nasal phonon, the usual graphic representation of portmanteau is with an upward ordered AND, (c) if my morphonic representation is correct there is no other possibility.

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PREDICTING AMBIGUOUS SYLLABIFICATION

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"...The syllable is either an UNNECESSARY concept, because the division of the speech chain into such units is known for other reasons, or an IMPOSSIBLE one, as any division would be arbitrary, or even a HARMFUL one, because it clashes with grammatical formatives." (Kohler 1966:207)

This sweeping generalization (emphasis in the original) by a prominent phonetician is intended to provide the coup de grace to the syllable as a structural entity, a concept "long respected but little described" (Einar Haugen, personal communication). Kohler hoped to cover all possibilities in this short article, but his dogmatisms are easily answered.

Kohler's argument for non-necessity is based on redundancy. Hockett 1947, Haugen 1956, and Fudge 1972, among many, show the syllable to be useful. Sampson 1970 and Sullivan 1976 show that it solves problems in phonology which have never been given non-arbitrary solutions on any other basis. I do not stipulate that Kohler has shown the syllable to be redundant; in fact, a close examination of his reasoning shows a certain circularity. But there are many redundancies in language. Even if the syllable were redundant, its usefulness would be grounds for disregarding the redundancy.

Kohler's argument for harmfulness concerns the disparity between grammatical formatives (morpheme boundaries) and syllabification. However, the phonetics of allegro speech shows that syllabification not only ignores all morphological boundaries but most word and syntactic phrase boundaries. Only clause and sentence boundaries seem to be honored more than ignored. Thus the harmfulness argument can be disregarded. Syllabification may obscure grammatical information, but we are stuck with the phonetic facts.

Kohler's argument for impossibility is based on a type of arbitrary segmentation: a continuant, e.g. *l*, between two vowels. This phoneme, in most languages, can fit into coda position of the syllable with the preceding vowel or into onset position of the syllable with the following vowel. The problem is that in a particular *VlV* utterance, there is no phonetic evidence for either choice. In fact, the phonetic evidence seems to indicate that the *l* performs both functions. But the relevance of this

argument depends on interpretation. The switchmatrix formalism described in Lockwood 1976 and Griffen's hierarchical model of phonology are two not incompatible ways of dealing with this situation. Furthermore, a practitioner of any bi-stratal phonology could adduce these data as evidence for a distinction between, say, the -emic and -etic levels.

As Kohler presents it, the argument from arbitrary division will not do the job.

However, there is another kind of impossible/arbitrary syllable division which occurs in Russian. Avanesov (1956:41-47) cites phonetic evidence that complex consonant clusters are divided between final position of one syllable and onset position of the following syllable. The differences occur not only between *lento* and *allegro* speech styles or between dialects or even from speaker to speaker, but in successive repetitions of the same word by the same speaker. Thus, to take a relatively simple example, *otca* 'father, g.sg.', may be pronounced [a tca] or [at ca], with the space indicating the syllable boundary. There are constraints, however. The pronunciation [atc a] does not occur.

This is a type of "arbitrary" syllabification which Kohler did not discuss. Yet it does occur and must be accounted for by any theoretical model of phonology which expects to account for the phonetic facts. The general description of the Russian syllable developed in Sullivan 1969 and Sullivan 1976 accounts for phoneme distribution and cooccurrence restrictions, for the relation of phonemes to contrastive features, and for archiphonemic neutralization and morphophonemic alternation. I show herein that it also predicts the full set of possible syllabifications (cluster divisions), and includes all constraints.

Such an ability casts additional doubt on Kohler's dogma and further defines the descriptive power of stratificational phonology.

I. The Russian syllable

Before demonstrating the ability of stratificational phonology to predict differing syllabification, I must outline the structure of the syllable in Russian. The tactic relations of the Russian syllable are described graphically in somewhat simplified fashion in figure 1 below. (See Sullivan 1969:232-88 for detailed description and justification.) The same structure is described algebraically in (1)-(14). In (1)-(14) the comma indicates an OR relation (the horizontal brackets in figure 1), the '+' an ordered OR (a bracket with separated lines), with the left-hand possibility the preferred or marked choice, and a simple space indicates the ordered AND relation (the triangles in figure 1). Parentheses indicate grouping (implicit in figure 1),

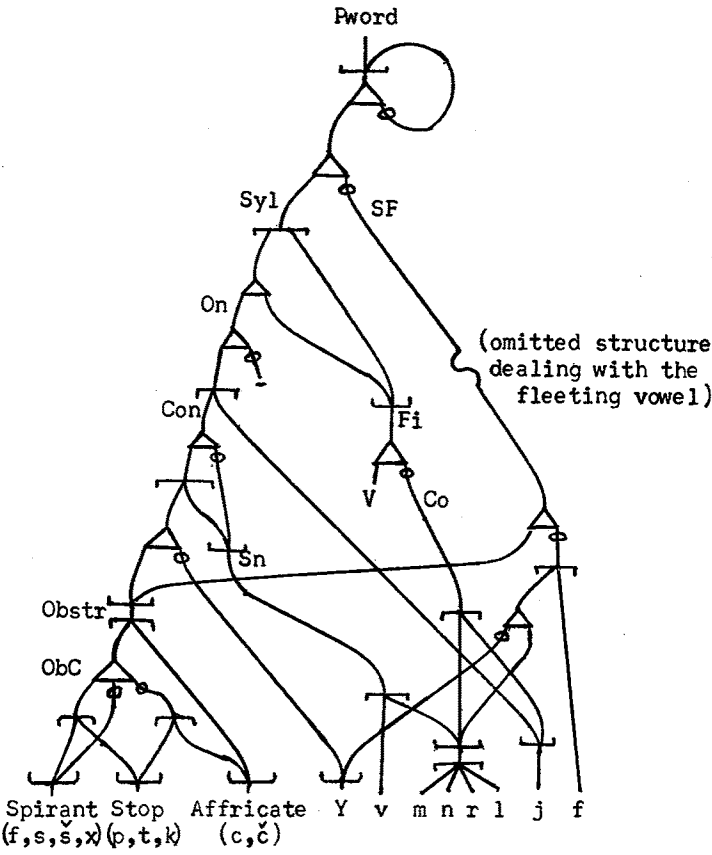


Figure 1: The syllable in Russian

- | | |
|-------------------------------------|---|
| (1) Pword/(Syl [SF]) ⁿ | (9) St/p, t, k |
| (2) Syl/(On Fi) + Fi | (10) Af/c, č |
| (3) SF/Obstr [([Y](m, n, r, l)), f] | (11) Sn/v, m, n, r, l |
| (4) On/(Con, j)[-] | (12) Fi/V[Co] |
| (5) Con/((Obstr[Y]), Sn)[Sn] | (13) V/i, e, a, o, u |
| (6) Obstr/ObC, Af | (14) Co/m, n, r, l, j |
| (7) ObC/(Sp, St)[Sp][St, Af] | Y = phonemic voice in obstruents,
such that KY = g |
| (8) Sp/f, s, š, x | - = desinence boundary marker |

and square brackets indicate optional occurrence (the tiny circles in figure 1).

In spite of the dual description (algebraic in (1)-(14) and graphic in figure 1), I do not consider them equivalent. Nor do many stratificationalists. Some avoid graphic descriptions because they are more difficult to read and even offputting. I prefer them because they make the totality of descriptions explicit. In the comments below, I refer to figure 1. But in the interest of understanding, I must describe the workings of figure 1, beginning at the top.

The phonological word in Russian is related to an optionally large series of syllables, each optionally followed by a syllable-final portion. The relationships pertinent to word accent and phonemic softness are ignored for reasons of simplicity. For the details concerning the fleeting vowel, which is related to syllable-final position, see Sullivan 1976. The syllable is in turn related to an obligatory onset, if possible, followed by a vowel and an optional coda. The vowel relationships are not considered here, and the relations of certain sonants to coda position are straight-forward--a simple set relation. But the onset and syllable-final positions require explanation.

Onset position is related to *j* or to a consonant (or consonant cluster), optionally followed by a desinence boundary marker. The consonant cluster may have an obstruent (or obstruent cluster) or a single sonant in first position. In final position of the consonant cluster there may optionally be one further sonant. The obstruent (cluster) is optionally voiced and is related to a single affricate or to one to three obstruents. A three-obstruent cluster will have a stop or spirant in first position, a spirant in second position, and a stop or affricate in third position. Second or third position or both may be empty, apparently without further restriction.

Syllable-final position is related to many of the same phonemes and phoneme combinations, but the hierarchical ordering is different. Syllable-final is related to two consonant positions, first to the obstruent position described above. Second syllable-final position is related to the *f* realization of *v* or to the nasals and liquids, optionally preceded by phonemic voice *Y*.

The hierarchical difference comes in the relations to *Y*. In onset position it is simply optional, depending only the preceding occurrence of some obstruent. The preceding occurrence of some obstruent is still necessary in syllable-final position. But its occurrence also depends on the succeeding occurrence of some sonant.

There are certain other differences between On and SF positions. For example, the distinction indicated between *v* and *f*

is simply positional (allophonic) rather than phonemic. Other differences in the relationships between sonants are ignored for considerations of simplicity.

The outline of Russian syllable structure is sufficient for the present purposes. It now remains only to show how encoding proceeds according to figure 1.

II. Syllabic encoding

Consider now the word *agentstvo* 'agency'. It is morphologically related to a root *agent*, a derivational suffix *stv*, and a nominative singular neuter ending *-o*. It can be encoded in several alternate ways via the diagram of figure 1. These are summarized in table 1 below.

The first syllable of *agentstv-o* has no onset, so it must be encoded via the right-hand branch of the ordered OR node leading directly to Final. The *a* fits into vowel position, and coda position is empty.

The *g* could fit into syllable final (SF) position of the first syllable. But it can also fit into onset position of the second syllable as *KY*. This latter is preferred because there is neither the fleeting vowel nor the end of the word.

After realizing *KY* in onset position, the second syllable realizes *e* in vowel position, and *n* in coda position. Assume that nothing is encoded in SF position.

The third syllable will then have *tstv-* in onset position: *t* in first ObC position, *s* in second position, *t* in third position, and *v* in final sonant position of the onset cluster, followed by the desinence boundary marker *'-*'. Vowel position of Fi is filled by the *o*, and everything else is empty.

A second encoding would have an identical first syllable. The second syllable is identical through coda position, but SF position is no longer empty. The *t* is realized in first ObC position, optional second and third ObC positions, as well as the other SF positions, are left empty. The third syllable now has *s* in first ObC position of the onset, nothing in second ObC position, and *t* in third position, with *v* in the final sonant position, followed by *'-*'. Vowel position again has *o*.

The third encoding is identical through coda position of the second syllable. SF position now has *t* in first ObC position and *s* in second ObC position. The third syllable onset now has *t* in first ObC position, nothing in the other ObC positions, and *v* in final sonant position with *'-*' following. Vowel position again has *o*.

	Syl ₁					Syl ₂					Syl ₃				
	Onset	Final	SF	Onset		Final	SF				Onset	Final	SF		
				Con	-						Con	-			
	V	Co		ObC	Y	Sn		V	Co	ObC	(ObC,Sn)	Sn	V	Co	
				123						123	123				
1.	∅	a	∅	∅	K∅∅	Y ∅	∅	e	n	∅∅∅	tst	v	-	o	∅ ∅
2.		a			K	Y		e	n	t∅∅	s∅t	v	-	o	
3.		a			K	Y		e	n	ts∅	t∅∅	v	-	o	
4.		a			K	Y		e	n	tst		v	∅	-	o

Table 1: Alternate encodings of agentstv-o, according to figure 1.

The fourth encoding differs only in SF position of the second syllable and onset position of the third. SF position now has *t* in first ObC position, *s* in second ObC position, and *t* in third ObC position. There being no obstruents in onset position, the *v* is realized in first sonant position of Con; second sonant position is empty. The '-' follows, as before, and vowel position has *o*.

Putting anything else in SF position of the second syllable would leave the onset of the third syllable empty, and this is avoided. The desinence boundary marker must occur in onset position here, and requires a preceding onset consonant, so at least the *v* must be in onset position of the third syllable.

These are the encodings of *agentstvo*.

III. Conclusions

The word *agentstv-o* has been shown to have four possible syllabifications: *a.gen.tstvo*, *a.gent.stvo*, *a.gents.tv*, and *a.gentst.vo*.

Presumably there could be two other syllabifications: *a.ge.ntstvo* and *a.gentstv.o*. Both are blocked. The former cannot occur for two reasons. First, *ntstv* is not a permissible onset for the third (or any) syllable. Second, there is no way to prevent the occurrence of *n* in coda position of the second syllable without adding structure to figure 1. Conversely, the latter syllabification would leave the third syllable without an onset. Figure 1 avoids this by preferring at least a CV third syllable. More importantly, it is blocked by the relationship which states that a desinence boundary marker must be preceded by some consonant in onset position.

This means that all the possibilities occurring are predicted and only those which actually do occur are predicted. No false

possibilities are permitted. Thus the syllable structure described for a number of independent structural reasons has, as an additional characteristic, the ability to predict all and only the possible syllable divisions precisely.

Thus a type of ambiguous (quadrigenous?) syllable division not foreseen by Kohler is predictable by a syllabic phonology. Of course, the structure only predicts the set of possible syllable divisions. It does not predict which one will be realized during a given encoding.

That type of prediction is beyond the scope of this research, and currently, of this researcher. There are no large-scale frequency studies of the competing possible syllable divisions in Russian. As a result, it is impossible to state at this time whether there is a dominant member of the set. That is, the choice among the possibilities may simply be a case of random selection. Or the derivational boundary between *t* and *s* may play a role. Or there may be some as yet undiscovered structural factor, e.g. economy of encoding path, to use a stratificational metaphor, or optimalization of the onset portion (I must thank Ernst Pulgram for reminding me of this possibility). In any case, nothing is said about the actual choice in a particular instance.

But the definition of the set of choices is there. Thus Kohler's 'impossible because arbitrary' objection to the syllable is further vitiated: you know where the syllable division is, and it is in one of the loci predicted.

IV. Is the syllable a phonological universal?

Probably it is. Probably every language syllabifies. Some languages, e.g. Bwamu and Vietnamese, seem to define the syllable on only one stratum. Others, e.g. French and Russian, seem to have the syllables defined independently on both phonemic and hypophonemic (linguistic phonetic) strata. The phonemic and hypophonemic syllables overlap, but are not isomorphic. These languages exploit the definition of the syllable in many ways. Still other languages, e.g. Aymara, give evidence for syllabification but exploit the syllable to much less a degree than Russian does.

But in the end, this is and should be an empirical question. It should not be settled by a priori pronunciamenta or by a phonological model which simply fails to establish a syllabic component.

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THE PHONEMIC SHAPE TYPES OF ENGLISH:
AN ESSAY IN NON-SYLLABIC PHONOLOGY

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I. The Syllable in Linguistic Analysis

The syllable is "universal." Or is it? The shape of English words is, for instance, commonly stated in terms of so and so many (stressed and unstressed) syllables. Is this description adequate? This paper argues that the syllable is not of universal, but of very limited adequacy - well applicable to languages like Chinese, Latin, Finnish, less so to Japanese, Welsh, Russian, French. Specifically, the syllable is impracticable for English. We propose to replace it, for analytic purposes, by the phonemic SHAPE TYPE.

Let me add, for fear of being misunderstood, that whatever the syllable may be, if it is to be useful in phonetics, it must be something that we can HEAR. This is implicit in the wider assumption that phonetics in general is about something that we can hear. Specifically, it follows that

- (i) any two homophones have the same number of syllables,
- (ii) if two words rhyme, their rhyming parts have the same number of syllables.

For an authoritative syllable count of English, we are usually referred to generally accepted opinion¹ ("native speaker intuition"). This, however, contradicts the AUDIBLE evidence in quite a few cases.

Let me name a few:

(i) Take the (bisyllabic) shapes which end in /l lz r n nt/, e.g. squirrel, Charles, higher, lion, weren't. In many varieties of American English, they rhyme with the monosyllabic shapes girl, Charles, hire, lion, burnt.

(ii) The English word naturally has, I am told, four syllables. It is currently pronounced, however, in such a way as to rhyme with match+ly. The English word jumps /jə' ms/ has, I understand, one syllable, the word sentence /se'ns/ two, maintenance /mei'ns/ three. The audible differences between them can, however, hardly be due to this allegedly different number of syllables.

(iii) Can anyone count the syllables in proclitic shapes like I'm going to eat /aimgnə'it/, I want to eat /aiwnə'it/, I have got to eat /aigət'it/? While "generally accepted opinion" may simply be wrong in the instances above, no "generally accepted opinion" exists for these proclitic shapes.

(iv) The only audible difference between ticked and ticket is in the release of the /k/ in ticket, but not in ticked. In the Scottish pronunciation, the /k/ is released in both words, but the release is voiceless in ticket, voiced in ticked. For the minimal pair Cree (one syllable) curry (two syllables), the audible difference is in the relative length of the /r/ and the following

vowel (Northern and Western American pronunciation). In mastery (three syllables) vs. pastry (two syllables), the difference is in the stressed vowels. In final vs. file, (as in final decision, file a suit, the difference is in the vowel nasalization.

Such differences are not usually associated with syllabicity except, under certain circumstances, the release of consonants. It is, of course, possible to lump all these differences together in the basket of "syllabicity," but is it practical?

II. Empirical Motivation

What do we need the notion of syllable for in the first place? We need it in order to state our (paradigmatic) phoneme inventories. For instance, we wish to state that:

(i) /k/ and /pr/ (as in clay, pray) are both initial clusters.

(ii) /ns/ and /nz/ (as in hence, hens) are both final clusters.

(iii) The flapped consonants [ɾ ɰ] occur in the medial and postmedial positions, as medial flapped [ɾ] in twenty, postmedial flapped [ɰ] in Epiphany.

(iv) The voiced aspirate stop [b^h] does not occur initially but only as a pre-initial cluster /b^h/, as in abhor.

(v) Clusters of distinctively voiced and distinctively voiceless consonants occur not initially, but medially and pre-initially, e.g. /tb/ in Whitby, /bs/ in obscene.

(vi) Consonant assimilation works medially (as in Canberra /kəmbrə/, but not between final and initial clusters (as in the alternant /kən+berə/), cf. Vancouver /-nk-/.

(vii) The "weak forms" of finite verbs, such as /l/ for will, /wnə/ for want to occur proclitically, not enclitically. The "weak forms" of the prepositions from, of occur both proclitically and enclitically, as in where do you come from /kəmfrəm/.

The terms initial, final in these statements are usually taken to refer to syllables. What do the terms medial, post-medial, pre-initial proclitic, enclitic refer to? We take it that all these terms refer to the entity which we call the SHAPE TYPE. Let me add, for the sake of completeness, that the word, the morpheme of the juncture are even less practicable for English than the syllable. The word edit rhymes with get it /-egət/, didn't with kitten /I?n/, the monomorphemic mangrove with the bi-morphemic man grove 'grove for men'.

III. The Shape Types

We distinguish between three shape types in English:

(i) The (conventional) monosyllabic shape, e.g. taint, ain't.

(ii) The enclitic shape, e.g. aided, ate it. This has some unstressed material after the stress, conventionally speaking.

(iii) The proclitic shape, such as assist, a cyst, I want to eat. This has some unstressed material before the stress, conventionally speaking.

The enclitic shape is subdivided into the enclitic short shape and the enclitic long shape, e.g. natural and naturally. The last vowel of the long shape can be expanded only by the consonants /d z l/, as in remedied, remedies, gallinule (apart from exotic borrowings such as parakeet, calaboose). There is no compelling phonetic reason to draw the line the way we conventionally do between the short enclitic shape and the monosyllable, but the line has to be drawn somewhere. We could, for instance, treat topple, pepper, bottom, open, city, widow as monosyllabic. This would add l-clusters, r-, m-, n-, y-, w-clusters to our inventory of final clusters, such as final /pl/ in topple, /dy/ in city, /dw/ in widow.

The Initial and Final clusters (see section (ii) above) are initial and final in the monosyllable. The Medial Consonants (and consonant clusters) follow the "stressed vowel" of enclitic shapes, then follows the Postmedial Vowel (e.g. /r/ in natural), then the Postmedial Consonant (or consonant cluster), e.g. /l/ in natural). This is the end of the short enclitic shape. The long enclitic shape adds the Weak Final vowel, e.g. /i/ in remedy, and the Weak Final Consonant, e.g. /z/ in remedies.

Some shape types are single words (e.g. wont 'habit'), some are more than one word (e.g. won't 'will not'). And some words are longer than just one phonemic shape, e.g. assiduous. This word has both proclitic and enclitic material. The words which have more than one stress, conventionally speaking, contain as many shapes as they contain full (i.e. non-reduced) vowels, e.g. (boundaries between shapes marked by the plus-sign +/+) ad+van+tageous, de+esca+late, an+tidis+establishment+arianism.

IV. The Adequacy of the Shape Types.

The initial, medial, postmedial, etc. positions which are defined by the shape types allow us to state the inventory of vowels and consonants (including clusters) in these positions. They are remarkably different inventories, for instance:

(i) /z/ (as in seizure) is limited to the medial position (and a sprinkling of peripheral instances finally, as in beige).

(ii) The single consonant /g/ is peripheral in the post-medial position. It is limited to a few learned words (such as esophagus) and to names, such as Montague, Pishtigo /'pist go/ (toponym of Wisconsin).

By contrast, the conventional description in terms of syllables and stresses is applicable only to the "stressed monosyllable". The English phonemes (vowels and consonants, including clusters) which we find listed in our textbooks are precisely those of the monosyllable. As soon as one tries to determine which phonemes and clusters do (and do not) occur in the other "syllables", he gets hopelessly bogged down. Certainly, "four-syllable words" like synsemantic, Cincinnati, gobbledygook are not simply sequences of four monosyllables! Some medial clusters cannot be taken for sequences of final plus initial clusters, e.g. the medial /dnzd/ in one (Northern English and Canadian) alternant of Wednesday.

Several diachronic processes can be stated adequately:

(i) The coalescence of marry = merry = Mary in the Western United States and in Canada obviously operates in enclitic shapes only. In effect, it reduces to six the inventory of so-called "stressed vowels before /r/":

/i_r/, as in spirit, spear it
 /e_r/, as in merit, bear it
 /a_r/, as in starring
 /o_r/, as in orange
 /u_r/, as in mooring
 /ə_r/, as in courage

This is the same inventory of retroflex vowels as in the monosyllable. Making these two inventories the same is, presumably, the "reason" of the change in the economy (in A.Martinet's sense) of the English language.

(ii) The loss of /y/ after alveolar consonants, as in rude, lute, new, does not operate in the postmedial position. Both British and American English have conserved the /y/ postmedially, as in virulent, curlieu, menu. The loss does operate in the proclitic position, however, as in supreme, neutrality.

A number of proverbial cruces of English phonemics resolve smoothly:

(i) The contrast between the final parts of the pairs

<u>refugee</u>	≠	<u>effigy</u>
<u>Plato</u>	≠	<u>potato</u> ₂
<u>permit</u> (sb.)	≠	<u>hermit</u> ₃
<u>métis</u>	≠	<u>matie</u>

is a contrast between shape types. Those in the right-hand column are enclitic shapes, those in the left-hand column are the compound shapes refugee, Plato, per+mit, mettis /meiti/.

(ii) Charles Hockett⁴ points out the audible difference between the voiceless affricates /ts₁/ in that chagrined me, ≠ /ts₂/ in pitcher. Similarly for the voiced affricates /dz₁/ in Did Giselle ≠ /dz₂/ in digitalis. "The environments are the same to the extent that, in each, a stressed vowel precedes and an unstressed one follows," so it appears those affricates are phonemically different. But the environments are the same only in terms of the stress-and-syllable description. In terms of shape types, /ts₁/ and /dz₁/ are on the boundary between two shapes, as in that+chagrined me, did+Giselle, /ts₂/ and /dz₂/ are medial in enclitic shapes.

In fact, not only the syllable becomes superfluous, as an autonomous notion, but also the Stress (at least at the present level of analysis). Both are notoriously mysterious. Once we set up the shape types, however, stress becomes a (predictable) property of the shape types. It is at the beginning of enclitic shapes, at the end of proclitic shapes, and vacuous on monosyllables.

This definition of stress by shape type resolves two further cruxes:

(i) The so-called fact that monosyllables, when spoken alone, are always stressed. This is not an empirical fact at all, but a theoretical stipulation. That is, of course, why it brooks no exception.

(ii) The elusiveness of the different degrees of stress. Does re-locate, for instance, have the primary stress on re-, secondary stress on -ate, or vice versa? Or is there also a stress on lo-? Listening to the radio these last few days when the word was use- a great deal in connection with the relocation of residents in the Love Canal district of Niagara Falls, I could not possibly have made a decision. "The degree of stress" is a matter not of word shape, but of intonation, more precisely, of contour position and pitch pattern. The latter varies with each actual occurrence of the word⁵.

Footnotes

¹For instance, by K.K. Pike, *Phonemics*, Ann Arbor 1947, p. 65.

²There is a perfect minimal pair permit (sb.) 'license' ≠ permit (sb.) 'baby pompano'. The latter word, which rhymes with hermit, is known on the Gulf Coast, cf. my article *The elementary intonation countour of English*, *Phonetica* 22 (1970), 82-111.

³Hypochoresis derivative of mate.

⁴If you slice it thin enough, AS 47 (1972), 233-255, quotation p. 242.

⁵Cf. my (forthcoming) *Manual of English Phonetics*, ch. 6, published by Messrs. W. Fink, Munich.

ON QUASI-AUTOMATIC STRESS SYSTEMS

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0. Introduction.

In a grammar of literary Macedonian, Horace Lunt makes the following statement on the status of stress in this modern Slavic language: 'The Macedonian stress is non-phonemic, and for the most part automatically determined' (1952:21). Even before reading further details, a linguist trained in the Neo-Bloomfieldian tradition dominant at the time would be disturbed by this statement, since he would view stress as non-phonemic only when it is completely automatic, not just 'for the most part' automatic.

Lunt's next statements will disturb our Neo-Bloomfieldian observer further, since the next paragraph cites several minimal pairs for stress placement, e.g. *godināva* 'this year (adv)' vs. *godīnava* 'this year (n)' and *letōvo* 'this summer (adv)' vs. *lētovo* 'this summer (n)'. Lunt further cites several other types of exceptions to the general rule of Macedonian stress placement, which involves initial stress on words of one or two syllables, and antepenultimate stress elsewhere.

Given the data, can we arrive at some understanding of what Lunt was about, or must we dismiss his treatment as a hopeless morass? It is the present writer's suspicion that Lunt's problem arose from trying to fit the facts into an insufficiently rich typological framework limited to unpredictable phonemic stress and predictable non-phonemic stress. Since a great part of the Macedonian data follows a general rule, it seemed undesirable to classify the language with those having completely unpredictable stress systems, so he simply put it into the other category and cited the exceptions.

Lunt needed, in fact, a third basic typological category of QUASI-AUTOMATIC stress. Given this, he could have concluded that Macedonian stress is phonemic in view of the potential contrasts, but still quasi-automatic, since special information is not required by the phonology to fix the stress of the vast majority of items.

This paper will discuss quasi-automatic stress in connection with the typological suggestions set forth by the French linguist Paul Garde. It will further show how many of Garde's principles can be interpreted in the light of stratificational phonology.

1. Garde's Stress Typology.

Garde's work is not particularly well known to American linguists, but it has made important contributions to the study of stress typology, and should be consulted by anyone investigating such questions in any framework. Relevant information on the

topic of quasi-automatic stress is found in Chapter 5 'The position of stress' of his 1968 monograph, which introduces the fundamental distinction among AUTOMATIC STRESS, FREE STRESS, and QUASI-AUTOMATIC STRESS.

His discussion of the quasi-automatic type begins as follows: 'However, for certain of the languages cited above, one cannot speak of automatic stress without simplifying the facts to some extent. There exist cases, doubtless marginal, but still real, where the determination of the stress presupposes not just the delimitation of the accentual unit, but also the identification of certain morphemes within this unit, i.e. supplementary grammatical information.' (1968:100) Then, using Macedonian as one of his primary examples, he details several cases of this type of stress, phrasing his account in terms of European structuralism.

Taking Garde's work as a point of departure, this paper will deal with 1) the formalization of quasi-automatic stress systems in a stratificational model, and 2) extensions of Garde's basic typological parameters including the implications of these extensions for the study of automatic and free stress as well.

2. Formalizations of Quasi-Automatic Stress Types.

Our discussion will begin with formalizations of four sets of quasi-automatic stress data, using the model of stratificational phonology set forth in Chapter 6 of Lockwood 1972. Macedonian will be discussed in some detail in section 2.1, while section 2.2 will summarize treatments of Polish, Classical Latin, and Turkish. All of these except Turkish have been discussed by Garde.

2.1 Macedonian.

By its very nature, any quasi-automatic stress system will have two basic subparts--an automatic part applying in the vast majority of cases, and a non-automatic part requiring special signals from the morphology applying to some exceptional items. Our discussion will begin with a formalization of the automatic stress in Macedonian, and then proceed to the exceptions, and finally integrate the two into one system.

The automatic part of the Macedonian stress system can be straightforwardly formalized as in Figure 1. There, construction W₁ shows the syllable and stress structure of phonological words of one or two syllables, with an initial stressed syllable followed optionally by a single unstressed syllable. Construction W₂ deals with phonological words of three or more syllables, showing an optional indefinite sequence of unstressed syllables followed by a single stressed syllable and two unstressed ones. This automatic stress will be inserted by the phonotactics rather than directly realizing any morphophonemic element, as shown by the absence of an upward realizational connection on the diamond for stress.

The exceptional cases are of the following types: 1) some morphemes are inherently stressed; 2) some grammatical suffixes inherently require that a stress fall on the syllable immediately preceding them; and 3) some proclitics and sequences of same are

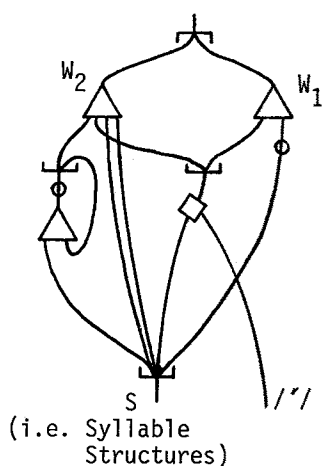


Figure 1. *Automatic Stress in Macedonian*

Algebraically:

$$W_1 / \begin{matrix} S \\ S \end{matrix} \quad S$$

$$W_2 / [S^n] \begin{matrix} S \\ S \end{matrix} S$$

syllable.² The elements of inherent self-stress (MN//) and inherent pre-stress would then connect to the subsystem detailed in Figure 2., which would occur as an alternative to automatic stress.

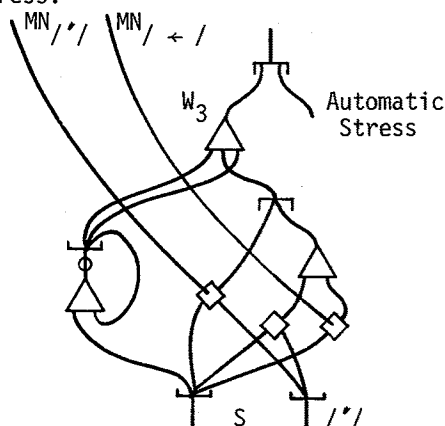


Figure 2.

Inherent Stress in Macedonian.

Algebraically:

$$W_3 / [S^n] (\hat{S}, \hat{S} \hat{S}) [S^n]$$

Exceptions of the final type involve proclitic words which may not take a stress despite their occurrence in the proper syllable of the normal stress-group. Examples include *sum mu go zél* 'I took it to him' and *ke se vènda* 'he will get married'.

not stressable.

Exceptions of the first type include such words as: /telefonfra/ 'telephones (vb)', /literatúra/ 'literature', /aranžmán/ 'arrangement', and /telefonfst/ 'telephone operator'. They simply require the marking of an inherent stress as part of the morphonic (morphophonemic) representation of the morphemes involved, along with provisions allowing such inherent stresses to be realized in preference to automatic stresses when the former occur morphonically.¹

Exceptions of the second type are exemplified by temporal adverbs such as those cited in the second paragraph of the introduction. These items can be morphonically distinguished from the corresponding nouns by positing a morphon of inherent pre-stress MN/ + /, realized phonemically as a requirement that a stress occur on the preceding

This phenomenon is best treated by positing a special boundary element $MN/=/$ separating an optional PRE-WORD from the normal stressed word. The pre-word will contain an indefinite number of unstressed syllables before the normal word with its inherent or automatic stress. Its structure is set forth in Figure 3, and in Figure 4 the content of Figures 1-3 is integrated into a single structure. Finally, Table I shows how the system outlined here will assign stress to selected Macedonian examples.

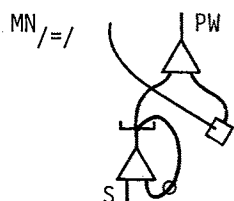


Figure 3.

The Pre-word in Macedonian.

Algebraically:

$$PW / S^n =$$

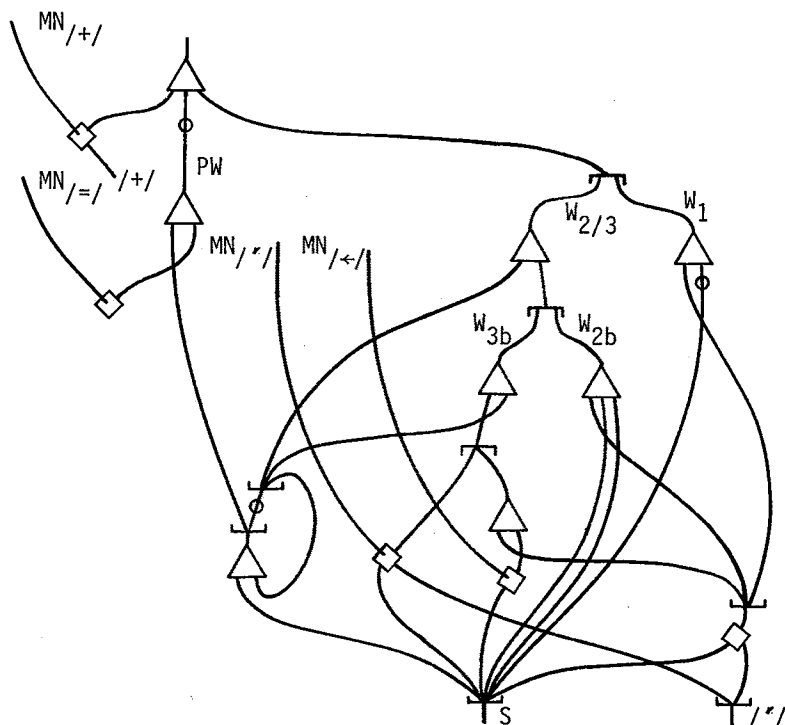


Figure 4. Integration of Figures 1-3: Macedonian Phonological Word Structure for Stress Assignment.

2.2 Comparison to Some Other Systems.

Details of some other quasi-automatic stress systems are outlined in Figures 5-7 and Tables II-IV: Polish is treated in Figure 5 and Table II,³ Classical Latin in Figure 6 and Table III,⁴

Table I. *Illustration of Macedonian Stress Assignment.*

TYPE	MORPHONIC	PHONEMIC	GLOSS
W_1	venča	věnča	marries
W_2	godinava	godīnava	this year (n)
W_3	literatūra	literatūra	literature
	telefonīst	telephonīst	telephone operator
	godinavā	godīnāva	this year (adv)
PW & W_1	summugo=zel	summogozěl	I took it to him
	ķese=venča	ķesevėnča	will marry
PW & W_2	imgo=prikazūvale	imgoprikazūvale	they told him about it
PW & W_3	ķe=telefonīra	ķetelefonīra	will telephone

and modern Turkish in Figure 7 and Table IV.⁵ These systems can be compared to the Macedonian with respect to their inclusion of automatic stress, inherent stress, and clitic sequences, and further as to the precise type of these when found.

As would be expected, all have automatic subsystems, Polish with penultimate stress (or stress on the only syllable), Turkish with final stress, and Classical Latin with stress on a long penult or otherwise antepenultimate (initial on words of one or two syllables).

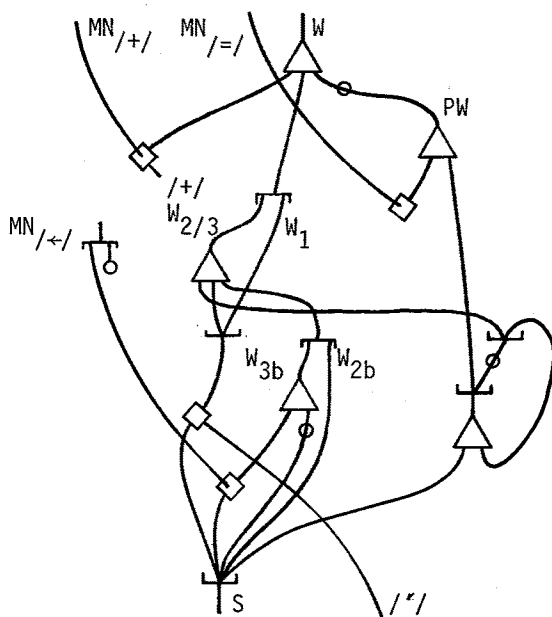
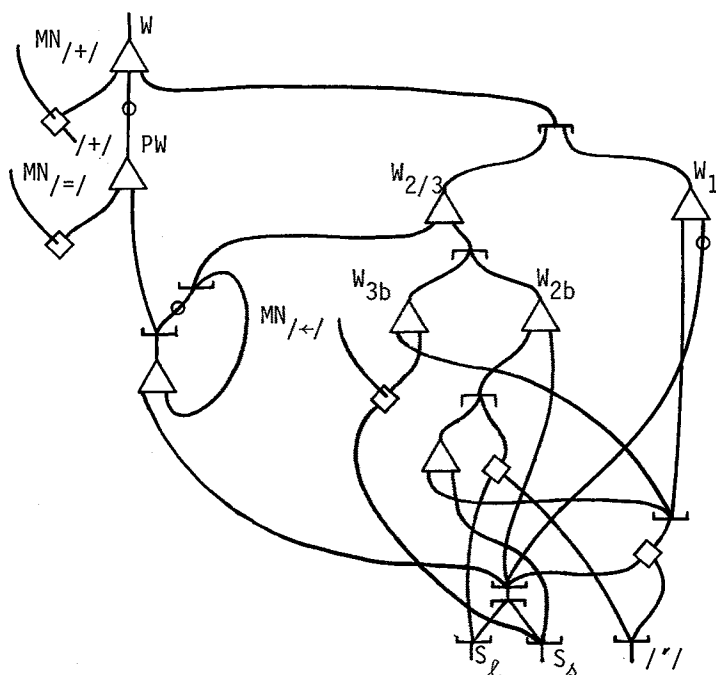
Figure 5. *Polish Phonological Word Structure for Stress Assignment.*

Table II. *Illustration of Polish Stress Assignment.*

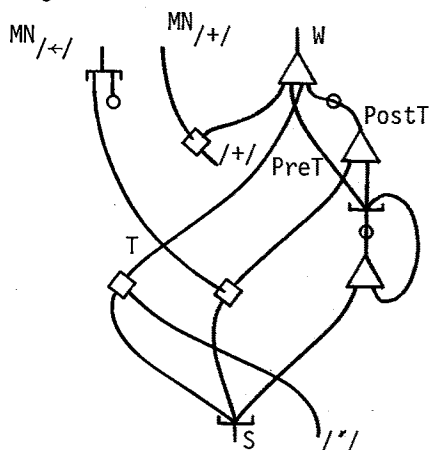
TYPE	MORPHONIC	PHONEMIC	GLOSS
W_1	daw	d ^á w	<i>gave (masc)</i>
W_2	j ^é zyka	j ^é z ^y ka	<i>of language</i>
	muz ^ý kami	muzyk ^á mi	<i>by musics</i>
W_3	ž ^é cpospol ^í ta	ž ^é cposp ^ó lita	<i>republic</i>
	matem ^á tyk	matem ^á tyk	<i>mathematician</i>
W_1 & PW	daw=by	d ^á wby	<i>would give</i>
W_2 & PW	čy ^t ali=š ^{my}	čyt ^á liš ^{my}	<i>we read (pt)</i>
	byli=byš ^{my}	b ^y libyš ^{my}	<i>we would be</i>

Figure 6. *Classical Latin Phonological Word Structure for Stress Assignment.*

All three of these languages also have inherent subsystems involving pre-stress, though in each case the pre-stress element is subject to restricted occurrence or realization. For Polish the pre-stress has its effect only in the ultimate or penultimate position (thus effecting penultimate or antepenultimate stress). For Latin the pre-stress is confined to two always-final clitics -que 'and' and -ne 'Interrogator'. In Turkish, two or more

Table III. *Illustration of Latin Stress Assignment.*

TYPE	MORPHONIC	PHONEMIC	GLOSS
W_1	dabo:	dābo:	<i>I shall give</i>
W_2	itak ^W e	itak ^W e	<i>also</i>
	ineo:	īneo:	<i>I enter</i>
W_3	itak ^W ē	itak ^W e	<i>and so</i>
	illenē	illēne	<i>is it that?</i>
PW & W_1	in=eo:	inēo:	<i>in this one</i>
PW & W_2	inter=oppida	interōppida	<i>between towns</i>
PW & W_3	ab=ami:ki:sk ^W ē	abami:ki:sk ^W e	<i>and from friends</i>



pre-stresses may occur in the morphophonemic shape of a single word, in which case only the first is realized.

Polish and Latin also have clitic sequences comparable to the Macedonian Pre-Word. For Latin it is also a Pre-Word, while for Polish it is a Post-Word.

Figure 7. *Turkish Phonological Word Structure for Stress Assignment.*

3. Toward a Typology of Quasi-Automatic Stress.

The data introduced will enable us to make some typological observations on quasi-automatic systems, though we would have to consider a much broader range of data before attempting a full typology.

A basic typology can be derived from the fact that all the systems sketched have involved some combination of automatic stress, inherent stress, proclitics, and enclitics. Any quasi-automatic system, of course, must have automatic stress and at least one of the others. Table V lines up our data based on the occurrence of the three optional structures.

Considering further details, we can achieve a more delicate typology. Automatic stress, for example, seems to fall into POSITIONAL and WEIGHTED types, with various subtypes of the

Table IV. *Illustration of Turkish Stress Assignment.*

TYPE	MORPHONIC	PHONEMIC	GLOSS
T	ku [˘] ş	kú [˘] ş	bird
PrT & T	türk [˘] Im	türkú [˘] m	my Turk
	somIn [˘] lErInIz	somunlar [˘] ınIz	your loaves
T & PtT	türk [˘] Im	türkú [˘] m	I am a Turk
	an [˘] kÉrE	ánkara ⁶	Ankara
	bel [˘] ki	bélki	perhaps
PrT & T & PtT	malatya [˘]	malát [˘] ya	Malatya
	gel [˘] İyorm [˘] I	gelíyormu ⁷	is he coming?

Legend: T = Tonic syllable
 PrT = Pre-tonic syllable(s)
 PtT = Post-tonic syllable(s)

Table V. *Basic Typology of Quasi-Automatic Stress Systems.*

	INHERENT	PROCLITIC	ENCLITIC
Mac	+	+	-
Pol	+	-	+
Lat	+	+	-
Turk	+	-	-

former. Latin combines the two factors, of course. Table VI shows the application of these considerations to our data.⁸

Within our data, furthermore, inherent stress divides into pre-stress and self-stress, with post-stress a third logical possibility,⁹ all of this

suggesting the classification summarized in Table VII.

Table VI. *Typology of Automatic Stress Sybsystems.*

	POSITIONAL				WEIGHTED
	INITIAL	ANTEPENULT.	PENULT.	ULTIMATE	
Mac	-	+	-	-	-
Pol	-	-	+	-	-
Lat	-	+	+	-	+
Turk	-	-	-	+	-

The expansion of our data base can, of course, be expected to suggest further refinements in this typology. It can also be expected to fill in some gaps in its application, while suggesting that other gaps are systematic rather than accidental, causing us to probe their possible explanations.

Furthermore, since quasi-automatic stress systems share some aspects of fully automatic stress and some aspects of basically inherent stress, many of the typological categories revealed in the study of one or the other subpart of the quasi-automatic

Table VII. *Typology of Inherent Stress Subsystems.*

	PRE-	SELF-	POST-
Mac	+	+	-
Pol	+	-	-
Lat	+	-	-
Turk	+	-	-

may be useful for the study of these other types of stress systems as well.

4. Conclusion.

To return to the Macedonian description of Lunt with which we began, we can conclude that that treatment suffered from the lack of a quasi-automatic stress category such as that recognized by

Garde. This paper has tried to show further that it can be fruitful to combine Garde's descriptive and typological ideas with a stratificational formalization to provide the basis for the typological investigation of these systems.

FOOTNOTES

- 1 This account assumes that no more than one ^{MN} /' / will occur in the morphonic representation of any word. Such will not always be the case with inherent stress systems: in the Italian system as described in Grade 1967: 314-315, only the last of several 'underlying' stresses will be realized.
- 2 The adverbs in question should be treated via ^{MN} /' / if they were assumed to have no internal morphological structure. In this case, however, the suffixes *vā/vō* seem to contain three morphemes each: deictic /v/, gender-marker /a/ or /o/, and adverb formative /+ /.
- 3 The Polish system is summarized in Garde 1968, pp. 100-102, and in more detail in Schenker 1966, pp. xxi-xxv.
- 4 The facts of Latin stress are treated as summarized by Garde 1968, pp. 103-105. The automatic portion of this diagram is corrected from Figure 6.9, p. 224) in Lockwood 1972. The author is grateful to Mr. Mark Carson for pointing a deficiency in the original diagram.
- 5 This system handles the basic facts presented in Mardin 1961, pp. 11-12, plus the fact that two or more inherent pre-stresses can occur morphonically, with the first alone being realized phonemically. At this stage it has not been possible to reconcile and integrate some further details suggested in Lewis 1967, pp. 21-24, and Lees 1961, pp. 41-50.
- 6 Cases such as this one might seem to be more naturally treated with an element of self-stress, but pre-stress is required in some cases, and it will work for all exceptional cases in the language, and so, out of considerations of economy, it is used exclusively.
- 7 According to the informant research performed by Mr. Michael Eric Bennett, this word can alternately occur with stress realized on the penult, reflecting an alternate form

of the progressive marker ^{MN}/Iyōr/ without the inherent pre-stress--as ^{MN}/Iyor/.

- 8 Initial stress is not found in our data if we disregard the special provisions for words of one or two syllables in the automatic systems of Macedonian, Polish, and Latin. Initial stresses as common in fully automatic systems, such as that of Czech. It appears, incidentally, that initial stress is the only type of positional stress which is determined from the beginning of the word rather than the end.
- 9 Post-stress is cited by Garde (1967:315) as occurring in Russian; see Sullivan 1969, for more details. Pre- and Post-stress might be found to vary further in the number of syllables away from its underlying mark that it is realized, i.e. two or more syllables before or after, though most of the logical possibilities seem highly improbable in practice.

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VRAIES ET FAUSSES INTERROGATIVES EN FRANCAIS
MONTREALAIS: ETUDE SUPRASEGMENTALE

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Cette étude porte sur les différences phonétiques pertinentes entre les énoncés interrogatifs et les énoncés à syntaxe interrogative mais dont le sens est tout autre. Cinq phrases ont été prononcées de deux façons possibles (vraies et fausses interrogatives) par deux locuteurs montréalais (homme et femme), puis soumises à trente étudiants de phonétique en vue d'établir des taux de reconnaissance. Les paramètres étudiés sont l'intonation, l'intensité et la durée. L'analyse est faite à partir de sonagrammes à bandes larges et à bandes étroites. De plus, l'écoute subjective est venue appuyer les données expérimentales.

Les cinq questions soumises au jugement des auditeurs (A: vraie interrogative, B: fausse interrogative) se trouvent dans le Tableau I. Les taux de reconnaissance ont été établis pour chacun des deux locuteurs (I: femme, II: homme).

Le tableau démontre que la majorité des interrogatives ont été reconnues comme étant vraies ou fausses en accord avec les intentions des locuteurs. Nous donnerons d'abord les constantes phonétiques relevées dans ces cas, puis nous tenterons d'expliquer le faible taux de reconnaissance des autres énoncés.

Les phrases reconnues majoritairement comme étant de vraies interrogatives subissaient d'abord une légère montée de la fréquence du fondamental (F_0) sur les éléments porteurs de sens (ou mots pleins) ainsi qu'une montée importante du F_0 en fin de phrase.

Pour les fausses interrogatives, on remarquait d'abord une montée du F_0 et/ou de l'intensité sur le pronom inversé de la proposition principale. De plus, on observait une stabilisation du F_0 (et quelquefois même une baisse) et/ou de l'intensité dans la proposition subordonnée, donc sur les éléments porteurs de sens. Enfin, nous notions l'absence de montée du F_0 importante en fin de phrase.

TABLEAU I

CORPUS	Taux de reconnaissance	
	I	II
1A) Savez-vous qu'un homme peut aller en prison s'il refuse de payer ses impôts?	71.4%	48.2%
1B) Savez-vous qu'un homme peut aller en prison s'il refuse de payer ses impôts!	86.2%	65.5%
2A) Tu le savais-tu que Mao était mort?	89.6%	96.5%
2B) Je le savais-tu que Mao était mort!	89.2%	86.2%
3A) Y-a-tu une place au monde où on est mieux qu'au Québec?	82.1%	89.2%
3B) Y-a-tu une place au monde où on est mieux qu'au Québec!	100.0%	86.2%
4A) Peux-tu arrêter de travailler?	75.8%	75.8%
4B) Peux-tu arrêter de travailler!	70.3%	100.0%
5A) Qu'est-ce que tu fais en linguistique?	93.1%	89.6%
5B) Qu'est-ce que tu fais en linguistique!	27.5%	62.0%

Nous illustrerons ces observations par l'analyse détaillée de la phrase 2 (Figure 1).

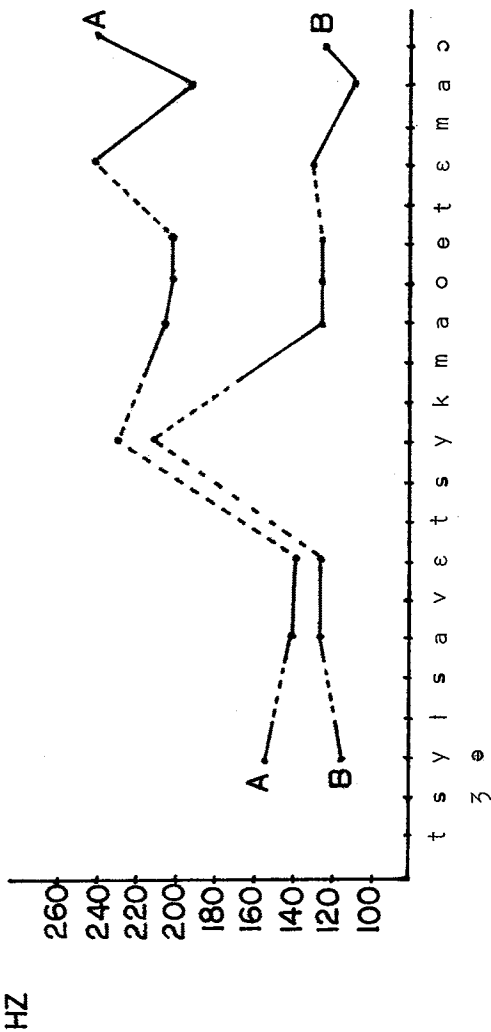
"Tu le savais-tu que Mao était mort?"

[t_sy!savet_sykmaoetema³]

"Je le savais-tu que Mao était mort!"

[ʒə!savet_sykmaoetema³]

FIGURE 1



Cette phrase peut prendre un double sens selon qu'elle est perçue comme étant une vraie ou une fausse interrogative. Dans le premier cas, le locuteur attend une réponse (positive ou négative) à savoir si l'interlocuteur était au courant de la mort de Mao. Dans le second cas, le locuteur fait une mise au point sur son ignorance face à l'évènement en question. La seule différence lexicale réside dans le pronom sujet "je" dans le deuxième énoncé; la présence du pronom "je" implique que dans ce cas on ne peut retrouver qu'une fausse interrogative.

Analyse suprasegmentale de l'énoncé 2 (locuteur II)

A) [t_sylsavet_sykmaoetema^o] (vraie interrogative)

Cette phrase, d'une durée de 138 cs, connaît une montée très forte du F₀ sur le pronom inversé de la proposition principale; la fréquence passe de 138 Hz à 231 Hz, soit une augmentation de 92 Hz. Par la suite, on note que la subordonnée se maintient haute en fréquence (aux alentours de 200 Hz) et atteint un sommet de 231 Hz sur la dernière voyelle de la phrase. De plus, deux éléments porteurs de sens ont été accentués: l'un ("Mao") par une augmentation de 40% de l'intensité, et l'autre ("était") par une forte remontée du F₀ (variation de 31 Hz). La durée ne semble pas avoir joué un rôle déterminant.

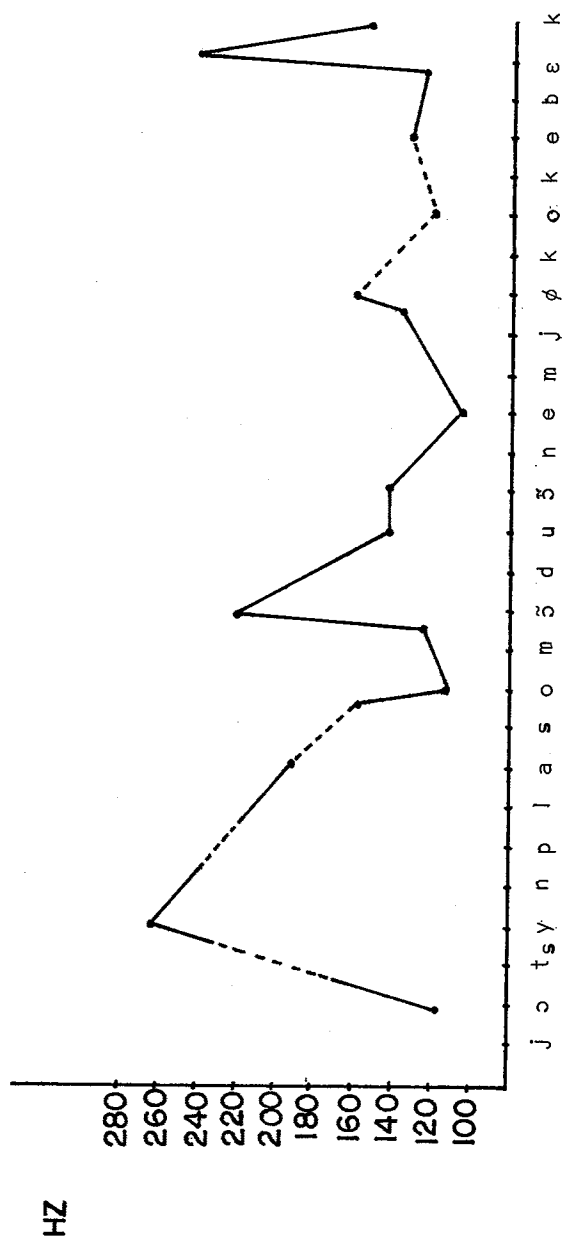
B) [ʒəlsavet_sykmaoetema^o] (fausse interrogative)

Dans cet énoncé (134 cs), le pronom inversé a aussi été accentué mais par l'intervention de trois paramètres: la fréquence fondamentale a connu une hausse de 88 Hz, l'intensité a augmenté dans un rapport de 45% alors que la durée s'est accrue de façon non négligeable. Par la suite, l'intonation de la subordonnée a subi une chute très forte (88 Hz) pour se maintenir aux alentours de 120 Hz avant de connaître une baisse finale de 16 Hz.

Les patrons respectifs de ces deux phrases démontrent que dans le cas de la vraie interrogative, l'accentuation porte sur le fait que "Mao est mort" (subordonnée), alors que dans le cas de la fausse interrogative, l'effet porte sur le fait que le locuteur ne savait pas que Mao était mort.

Il est à noter que le patron intonatif de la fausse interrogative, bien que présentant certaines constantes, permet une certaine variabilité, et que des effets stylistiques peuvent en être la cause. La Figure 2 illustre bien ce phénomène.

FIGURE 2



Dans cette fausse interrogative (reconnue à 86.2%, locuteur II), on remarque un certain nombre de sommets intonatifs sur des éléments porteurs de sens. Cependant cette phrase ne peut être perçue comme une interrogative étant donné l'accentuation du pronom inversé dans la principale et la forte baisse du F_0 de la dernière voyelle de la phrase.

Comme nous l'avons mentionné plus haut, certaines phrases n'ont pas obtenu un taux de reconnaissance satisfaisant lors du test.

Peu de juges ont reconnu les phrases 1A et 1B comme étant respectivement une vraie et une fausse interrogative. Après analyse, nous avons constaté que la fréquence du fondamental de la subordonnée conditionnelle se maintient plus haut dans la fausse interrogative que dans la vraie interrogative contrairement à la structure prédite par le modèle. De plus, leurs fréquences fondamentales convergent vers un point élevé en fin de phrase alors que cette hausse est habituellement réservée aux vraies interrogatives.

Pour la phrase 5B (locuteurs I et II), le faible taux de reconnaissance ne relève pas de la structure suprasegmentale de l'énoncé. Il semble que les phrases introduites par les locutions interrogatives du type "qu'est-ce que" et "qu'est-ce qui" sont perçues comme étant interrogatives, par l'ensemble des auditeurs montréalais, et ce malgré l'absence de patron à intonation interrogative. De fait, les structures de ces deux fausses interrogatives correspondaient au modèle prévu.

Cette étude, en plus de confirmer les patrons habituellement associés à la phrase interrogative, nous a permis de dégager certaines constantes qui permettent de lever l'ambiguïté sémantique pour deux structures syntaxiques de surface identiques. Toutefois, il serait intéressant d'examiner les hypothèses proposées dans cet article sur un corpus plus vaste et de rechercher si les comportements observés relèvent d'un code partagé par les locuteurs francophones montréalais ou propre à l'ensemble des locuteurs francophones.

PROSODIC ANALYSIS OF THE SPEECH OF AN ELDERLY LADY

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I. Introduction

The material which I have been working with is the speech of an elderly lady. I recorded an informal breakfast conversation with this subject, eighty-eight years old, whom I work with as a part-time companion. The goal initially was simply to ascertain the distribution of the prosodic features of relative stress, pitch, tempo, length and juncture. In the process, two major observations about the data emerged which I would like to focus on in this discussion:

1. This subject has a tendency to produce speech in clusters and these speech clusters are characteristically patterned in terms of prosodic features ; and
2. The distribution of these prosodically distinctive speech clusters correlates directly with the distribution of topics of discourse.

II. Procedures

The observation that this subject speaks in prosodically distinctive clusters which correspond to topics of discourse began as an impressionistic response to the acoustic data. While listening to the tape recorded conversation, it was obvious that the subject was shifting her overall style of delivery regularly throughout.

In order to study this phenomenon, my first step was to indicate on the transcript every point at which such a shift was perceived to occur. This process yielded two orders of speech 'stretches' distinguished on the basis of two types of junctures: major junctures, at which there occurred radical changes in the overall delivery; and minor junctures, where the adjacent stretches differed less radically but still perceptibly. As such, the major stretch segments, bounded by major junctures, consisted of one or any number of minor segments, bounded by at least one minor juncture and either a major or minor juncture.

The next step was to determine what were the salient prosodic features responsible for the perception of these stretch segments.

For the prosodic transcription, I was basically using the Four Stress system of the Smith-Trager tradition, along with the concepts of medial juncture (or 'breaks') and terminal juncture (or 'pauses') as boundary markers for the speech

segments of the two orders of contour and line, respectively; also the notion of pitch configurations, especially at junctures, was employed.

I did find it useful to add two features to the prosodic transcription on the basis of two discrepancies noticed between the acoustic information of the tape recording on the one hand, and the transcription as notated via the system just described on the other.

These two discrepancies were as follows:

(1) Relative stress was more apparent in the acoustic data than in the transcript (e.g., there was no way of perceiving from the transcript that all 'primary' stresses were not equally weighted); and

(2) The notion of medial juncture or 'breaks', with the accompanying notion of the contour unit, was not sufficient to describe what occurred perceptibly as two variant types of medial junctures distinguished according to degree of greater or lesser perceptibility, and degree of greater or lesser fusion between the adjacent contour segments.

To account for (1) above, I included in the stress notation a syllabic weight indicator for the more heavily weighted 'primary' syllables (see Table 1 for illustration).

To account for (2) above, I simply distinguished two kinds of medial junctures which were viewed as boundary markers for two different orders of contours. I still refer to the more perceptible medial juncture as a 'break', two of which in a prosodic line (or one 'break' in conjunction with a 'pause') function as boundary markers for what I am tentatively referring to as a pertinent contour unit (see Table 1 for illustration); whereas a less perceptible medial juncture is referred to as a "linkage" (see Table 1 for illustration), which acts as a fusional property of two or more "linked" contours within a 'pertinent' contour unit. This is in keeping with an integrational approach to prosodic phenomena in which the notion of fused units is viewed as a vital dynamic principle of the organization of natural discourse.

With this transcription system, then, I was able to study the distribution of prosodic features in the stretch segments described above, which in relation to the transcription system could be referred to more directly as line collocations. It was here that it became apparent that each of these line collocations, major and minor, could be said to manifest specific prosodic pattern characteristics. Even more significant than this was the discovery that the minor line collocations manifested prosodic pattern characteristics which could be understood as variants of major prosodic pattern characteristics which correlated directly with the major line collocation units identified in the transcription.

1

see Paul L. Garvin and Madeleine Mathiot, "Fused Units in Prosodic Analysis"; published in WORD, Vol. XIV, pp.178-186

As indicated in Table 1 below, where three minor line collocations are shown as representative of the three major line collocations in the eight page data sample, the prosodic features of relative stress, relative tempo, junctural character, terminal pitch, and relative length of prosodic lines are shown as salient pattern characteristics.

As can be seen in this table, for example, unit I could be characterized as being emphatic overall, with a high frequency of heavily weighted primary stresses distributed over relatively short lines, and manifesting an abstract relative stress pattern (where the three terms represent the initial, central, and final grossly perceived portions of a characteristic prosodic line, regardless of length). In opposition to unit I, unit II could be characterized as uneven overall, with a lesser frequency of heavily weighted syllables, a quality of more 'linked' contours, and an abstract pattern which shows a tendency toward two strong syllables in the central and final portions of a line, with the heaviest weight being in the final portion ().

In an attempt to understand why this phenomenon of prosodic patterning occurred in this data, I constructed a topical outline by assigning a topic of discourse to each of the line collocations, major and minor. The results are very provocative, for the topical outline reveals a very strong correlation between choice of prosodic patterning characteristics on the one hand and topic of discourse for this subject.

For example, the first major line collocation deals directly with the subject's response to the breakfast itself. Within this major unit are four minor units, the first one (unit I in Table 1) dealing topically with the orange that the subject is eating, the second one with a comment about the breakfast in general, the third being again in reference to the orange, and the fourth being an appreciative remark. Prosodically, each of these minor units are patterned similarly to the unit I in Table I. The slight variation between the minor units is basically in tempo of delivery, with relative stress distribution remaining roughly the same. The second major line collocation deals with the subject's observations about things happening outside the window. It consists of five minor units, which deal with the house next door (unit II in Table 1), the tree outside, the Sun shining, a shiny streak of sun on a rooftop, and finally the leaves turning brown. Again, prosodically these minor units show themselves to be variants of unit II as shown in Table I, above. The third major line collocation consists of only one unit (unit III in Table 1, above), and is basically reflexive in character, being in reference to a subjective state.

The rest of the data bears out this direct correlation between prosodic patterning and topic of discourse. For example, the prosodic pattern characteristics of major unit I recur off and on throughout the remainder of the data, whenever the subject is speaking directly in relation to the breakfast itself, with significant variations in the patterning

which are beyond the scope of the present paper, but generally with high similarity. The pattern characteristics of the third major unit (unit III, Table I) only appears in this one segment of this eight page portion of the transcript, but form a highly recurrent pattern in the remainder of the twenty page transcript, wherein the subject speaks much more directly about her own subjective, i.e., reflexive awareness.

III Conclusions

The results of this study are highly suggestive. Why was this phenomenon of such clear and consistent prosodic patterning observed in this data, and what is the deep significance of the fact that these prosodic patterns are related to topics of conversation for this subject?

One possible interpretation to account for why this prosodic patterning occurs as distinctly as it does in this specific data would be that a certain pattern rigidity is characteristic of this subject. This viewpoint carries with it the underlying question of whether or not this feature could be related to the elderly age of this subject, and this remains an empirical question awaiting similar studies with other elderly and non-elderly speakers.

Irrespective of why the patterning in this particular data is so distinct is the question it raises as to whether similar, if less distinctive, prosodic patterning tendencies occur generally for all speakers. Along with this comes the question as to what are the cultural and/or psycho-physiological variables which are determinant of pattern characteristics.

Finally, the relation of prosodic pattern characteristics to topics of discourse seems to support at least the following basic considerations:

- (1) That language in general reflects the subjective states of its speakers (e.g., attitudes, moods, emotions, thought styles, etcetera);
- (2) That prosodic systems in particular may be largely responsible for this expressive capacity of language; and
- (3) That prosodic systems are not so unpatterned in distribution as they may appear upon surface evaluation, but can be understood as patterned along a more psycho-physiological dimension in conjunction with various functions of language use such as expressive functions and/or interactional functions, being referential more to subjective than to objective states.

TABLE 1.

TEXT	Relative stress	Relative tempo	Structural character	Terminal pitch	Relative length
I. oh ʔ that's that's <u>fine</u> ʔ ʔoh hne ʔ ʔ boy ʔ this loo this looks deli <u>ci</u> ous ʔ this is an <u>orange</u> ʔ oh ʔoh ʔ well ʔ I guess I'll ʔ have a good breakfast ʔ while morning ʔ	heavily stressed; abstract pattern Λ ∨ /	medium	few linkages emphatic	falling	short lines (average 2 contours per line)
II. I have no idea ʔ who lives over in those houses ʔ you never ʔ see anybody ʔ there ʔ ʔ-but you see ʔ they have ʔ curtains up ʔ in all o that ʔ but you don't see anybody ʔ a round the yard ʔ so ʔ I I don't know ʔ who they are ʔ or anything ʔ ʔ I don't know ʔ	less heavily stressed; abstract patterns Λ ∨ /	faster	alter-nates between linkages and breaks uneven	variable	long lines (average 3 contours per line)
III. I ʔ seem to be ʔ so ʔ slow this morning ʔ when my ʔ breakfast ʔ I ʔ I don't know ʔ why ʔ ((oh don't worry about it you've got time)) yeah ʔ but it's ʔ calm me ʔ so long ʔ	heavily stressed; abstract patterns Λ / /	slow	many linkages drawn out	falling	medium

* = linkage ; _ = heavily weighted syllable

REALIZATIONS INVOLVING SPANISH (AND OTHER NEOROMAN) SUPRASEGMENTAL GRAPHEMES

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The suprasegmental graphemes of Spanish are ^G/capitals/, ^G/small capitals/, ^G/italics/, ^G/boldface/, and, very occasionally, ^G/letterspacing/. These suprasegmental graphemes are those which can only be realized in a written text if their realizations are combined with the realizations of segmental graphemes--i.e. letter, numeral, punctuation, and logographic graphemes. A suprasegmental grapheme is typically, though not necessarily, realized together with all the segmental graphemes of a word or of some larger construction.

These suprasegmental graphemes present a rather different problem for linguistic analysis than do the vowel, consonant, and diacritic graphemes of Spanish, for which realizational formulas were described in Herrick 1974a and Herrick 1977a. Those segmental graphemes all have rather close correspondences to the phonemes of their language, and the details of their correspondences are applicable only to their own language. The suprasegmental graphemes of Spanish, on the other hand, do not have such close correspondences to the phonemes of their language, but the formulas given here for their realizations should be applicable not only to Spanish but also to all the other languages which have orthographies that use the Neoroman script.¹

On some level of the language far above the graphemic stratum, each suprasegmental grapheme has a realize which typically occurs simultaneously with an entire word or some other large grammatical construction; in the graphemic stratum of the language, that word or other construction will be realized by a sequence of segmental graphemes, which will occur simultaneously with the suprasegmental grapheme. The basic difficulty in describing the realizations of suprasegmental graphemes² lies in determining just how the realization of a suprasegmental grapheme is to be distributed over the realizations of all the segmental graphemes which occur simultaneously with it, so that realizations of simultaneous segmental and suprasegmental graphemes will occur simultaneously.

¹This term was introduced in Herrick 1974b for the system of characters commonly called the Roman or Latin script.

²The same difficulty may also occur while describing realizations of suprasegmental phonemes.

sponds to a group of simultaneous chilographemes, which specify all of the linguistically significant facts about that mark.⁴ There should be a biunique relationship across the graphic interface between the chilographemes, in the linguistic form, and certain observable facts about the marks, in the graphic substance. Because each of these marks is sloped, each of them must correspond separately to $G_{\text{main axis sloped/}}$. Moreover, the graphemic signs of shape which are embodied by these marks show that $G_{\text{/italics/}}$ has separately conditioned the realizations of both $G_{\text{/G/}}$ and $G_{\text{/A/}}$.

It will be assumed that, as shown by the network in Figure 2, $M_{\text{/gaels/}}$ occurs simultaneously with another morpheme expressing the fact that it is a foreign word.⁵ $M_{\text{/gaels/}}$ is realized by a sequence of five letter graphemes, and $M_{\text{/(foreign word/)}}$ is realized by $G_{\text{/italics/}}$ which, as the graphotactics shows, occurs simultaneously with that entire sequence of letter graphemes. All of these graphemes can be realized in either of two ways.

As shown in the network in Figure 3, $/italics/$ may itself be realized by $G_{\text{/sloped/}}$; presumably the realization of $G_{\text{/sloped/}}$ will be distributed among all the marks by the chilographotactics, next to the graphic interface. In this network, $G_{\text{/italics/}}$ also conditions the choice of the graphemic sign of shape $G_{\text{/ital. min. g/}}$ as the realization of $G_{\text{/G/}}$ and the choice of $G_{\text{/ital. min. a/}}$ as

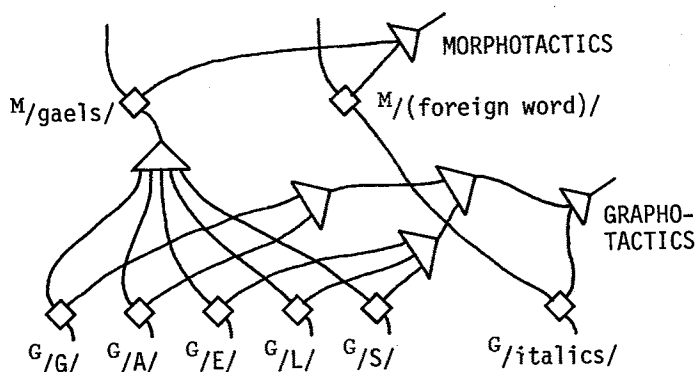


Figure 2.

⁴These "chilographemes" were called "hypographemes" in Herrick 1977b (which was written in 1973); but because the prefix "hypo-" has now been used with so many different meanings, I would prefer to use the prefix "chilo-", which was introduced in Herrick 1977c as a designation for any of the parts of a language which lie next to its interfaces. The prefix is derived from Greek *cheilos* 'lip', hence 'rim (of a bowl)', hence 'edge (of anything)'.

⁵ $M_{\text{/gaels/}}$ is shown here as one morpheme; if, however, the person borrowing the word were aware of the division between the stem and the plural marker, it would not affect the argument of this paper.

the realization of $^G/A/$. Alternatively, as shown in the network in Figure 4, $^G/italics/$ may have no separate realization of its own, but may simply supply the environment in which $^G/G/$ will be realized by both $^{GS}/ital. min. g/$ and $^{GS}/sloped/$ and also the environment in which $^G/A/$ will be realized by both $^{GS}/ital. min. a/$ and $^{GS}/sloped/$. Of these two networks, Figure 3 is immediately simpler, in that $^{GS}/sloped/$ is represented only once, while Figure 4 is potentially simpler, in that $^{GS}/sloped/$ has already been distributed to each of the marks and its realization does not have to be handled by another tactic pattern.

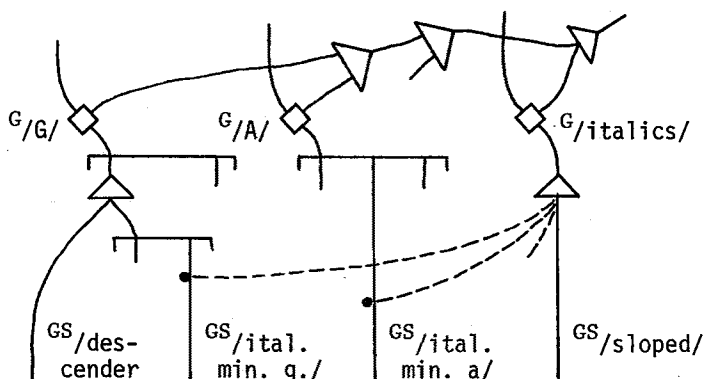


Figure 3.

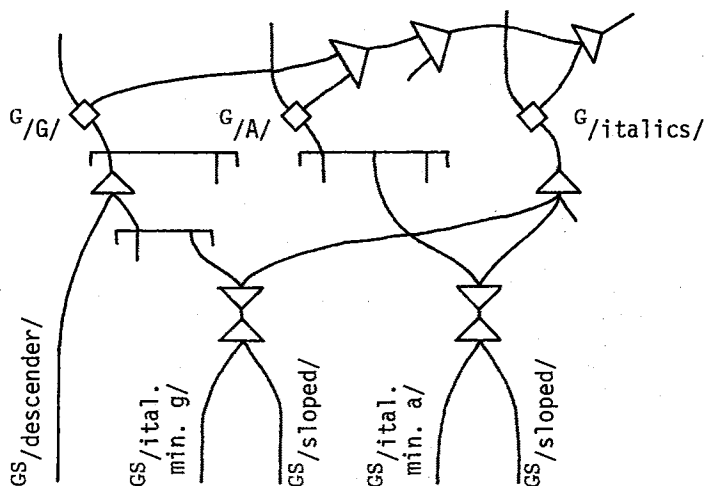


Figure 4.

The realization of G /capitals/ poses a similar problem.

(2) ... los Estados miembros de la OEA, ...

'... the member States of the OAS, ...'

contains an acronym which is written entirely in capital letters. It will be assumed that the concept "Organization of American States" and the concept of using an acronym rather than a fuller form of a name both occur at some very high level of the language, as indicated in the network in Figure 5. Assuming also that, for

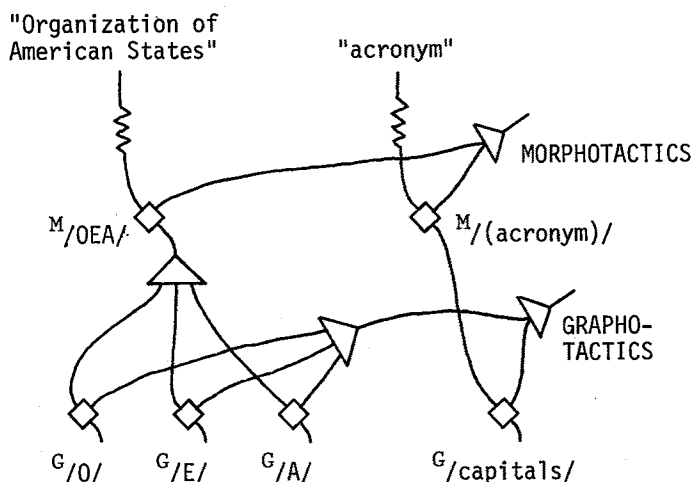


Figure 5.

some reason, the acronym OEA rather than the fuller form *Organización de los Estados Americanos* is chosen as the realization of the former concept, $M/OEA/$ occurs in the transduction simultaneously with $M/(acronym)/$. $M/OEA/$ is realized by a sequence of three letter graphemes, and $M/(acronym)/$ is realized by $G/capitals/$ which, as the graphotactics shows, occurs, simultaneously with that entire sequence of letter graphemes.

All of these graphemes can be realized in either of two ways. As shown in the network in Figure 6, $G/capitals/$ may itself be realized by $G^S/ascender/$, which represents the generalization that all capital letters extend above the height of the smaller lower-case letters (which height printers call the "x-height"). In the realizations of $G/E/$ and $G/A/$, $G/capitals/$ also conditions the choices of graphemic signs of shape that are proper for capital letters. Alternatively, as shown in the network in Figure 7, $G/capitals/$ may have no separate realization of its own, but may simply supply the environment in which each letter grapheme is realized by $G^S/ascender/$ as well as by an appropriate graphemic sign of shape. The question of which realization for $G/capitals/$ is to be preferred is much like the question of whether Figure 3 or Figure 4 is to be preferred for the realization of $G/italics/$.

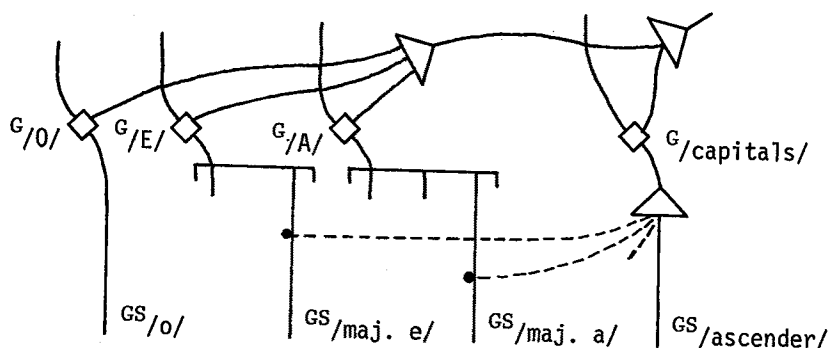


Figure 6.

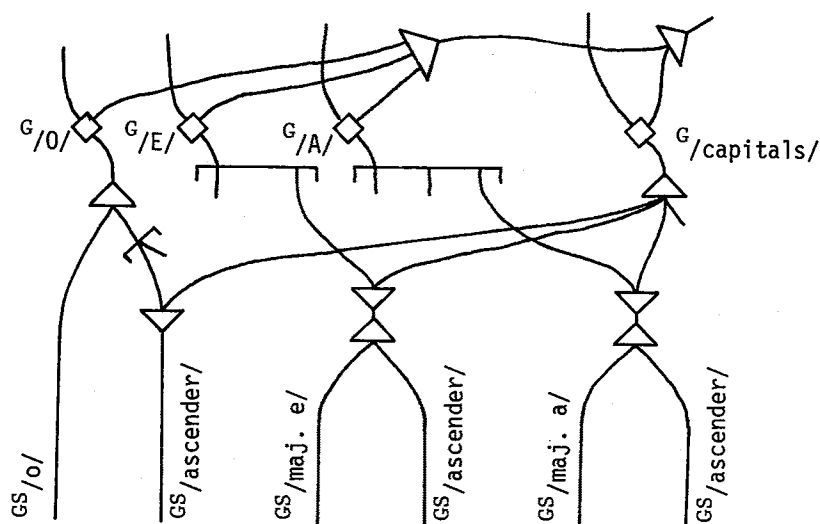


Figure 7.

There are two pieces of evidence which suggest that distribution within the graphemic alternation pattern is to be preferred. One of these appears in the three letters which make up the word

(3) lid LID 'fight'

all of which have tall lower-case realizations. Whether or not the word *lid* is capitalized, the marks embodying it will always extend above the height of the smaller lower-case letters. Therefore, as shown in Figure 8, the perception of each of the marks shown in the graphic substance will include CG /top above x-height/. Assuming the kind of realization shown by the network in Figure 6, the upward transduction for these characters will have the trace shown in Figure 8. For the lower-case marks, the upward traces from CG /top above x-height/ remain separate until the level of the

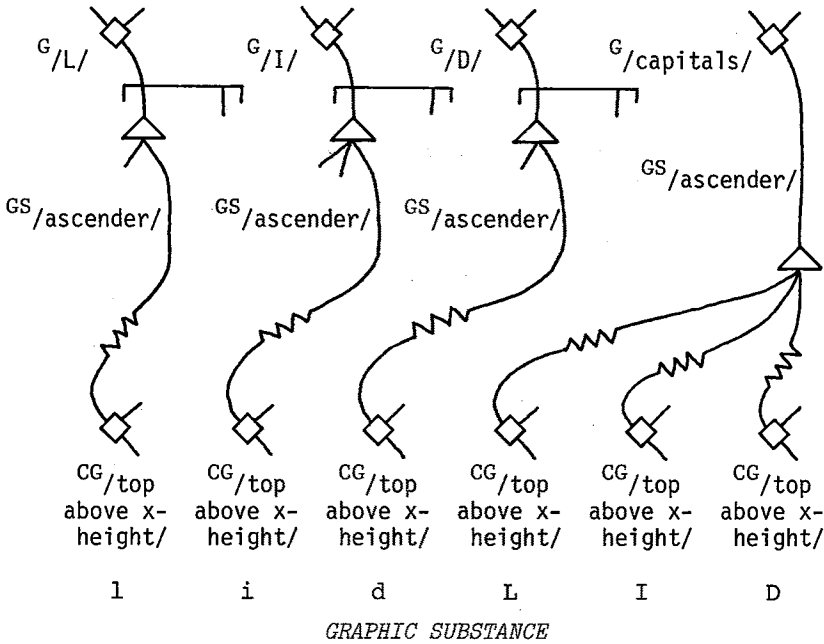


Figure 8.

graphemes is reached; but for the capitalized marks, the upward traces from *CG/top above x-height/* are immediately combined into a single trace. Such a distinction assumes that something within the chilographemic stratal system can determine whether a mark does or does not embody capitalization, but there is no way of determining that fact below the graphemic stratal system. Figure 8 is therefore unsatisfactory, which means that Figure 6 is also unsatisfactory.

The other piece of evidence involves words in which only the initial letter is capitalized. The proper name

(4) Miguel de Cervantes Saavedra

is partially realized according to the network shown in Figure 9. The entire name, which is assumed to form one lexeme, is realized by a sequence of four morphemes, and *L/((proper name))* is realized, in some way not shown here, by *G/(p.n.)* occurring simultaneously with three of those morphemes. Of those four morphemes, *M/Miguel/* is realized by a sequence of six letter graphemes, divided between

⁶This realization has been divided among three strata on the assumption that the morphotactics will prescribe that *M/de/* is a kind of morpheme that does not count as a proper name on the morphemic stratum, even though it partially realizes a proper name on the lexemic stratum.

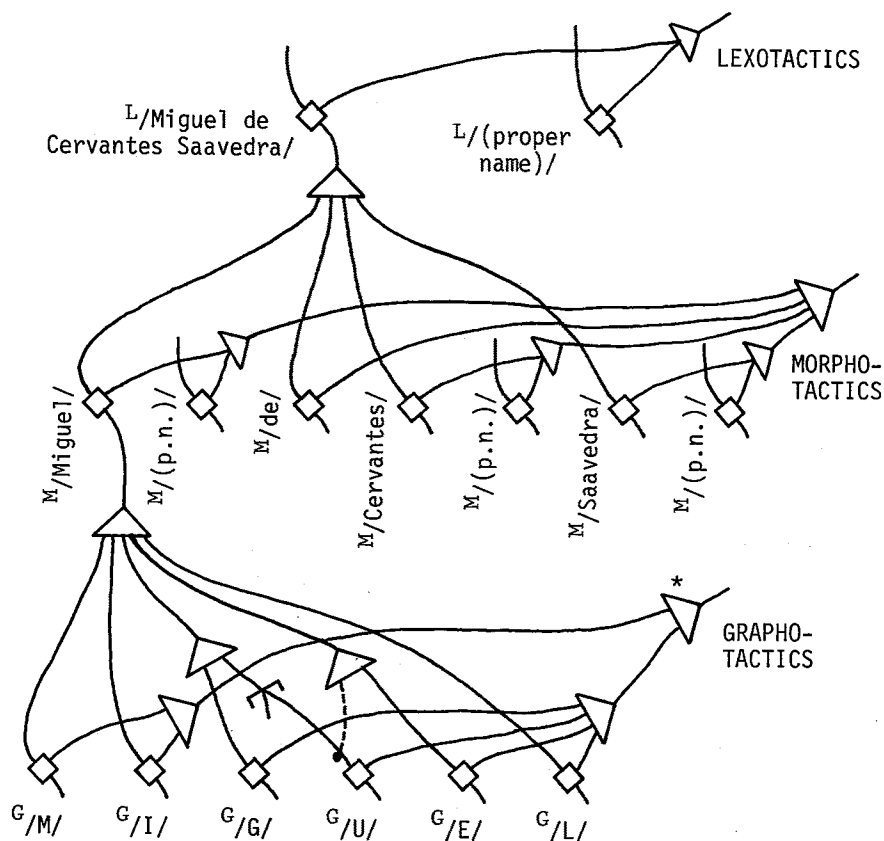


Figure 9.

two syllables, and $M'/(p.n.)/$ which occurs with it must be realized in some way that will cause only $G'/M/$ to be capitalized.

Three possible realizations for $M'/(p.n.)/$ are shown in Figures 10, 11, and 12; the first two of these are unsatisfactory. Although they both provide that $G'/M/$ and $G'/initial\ capital/$ are realized by $G^s/ascender/$ and $G^s/maj.\ m/$, they make those two graphemic signs occur in sequence rather than simultaneously. (In Figure 11, $G'/\#/$ is the label for the determined grapheme of word-space, which the graphotactics must supply anyway.) In the network in Figure 12, however, $G'/M/$ and $G'/initial\ capital/$ are satisfactorily realized by $G^s/ascender/$ and $G^s/maj.\ m/$ occurring simultaneously, and the conditioning shown there is intuitively rather comfortable: $G'/M/$ is realized as a capital letter when it occurs in a word that

⁷These three networks are somewhat abbreviated, and to help show how they fit with the network shown in Figure 9, the graphotactic ORDERED AND node dominating the six letters of the name *Miguel* has been marked with a star in all four networks.

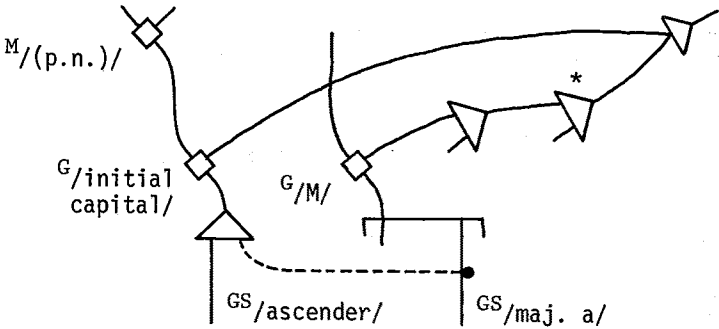


Figure 10.

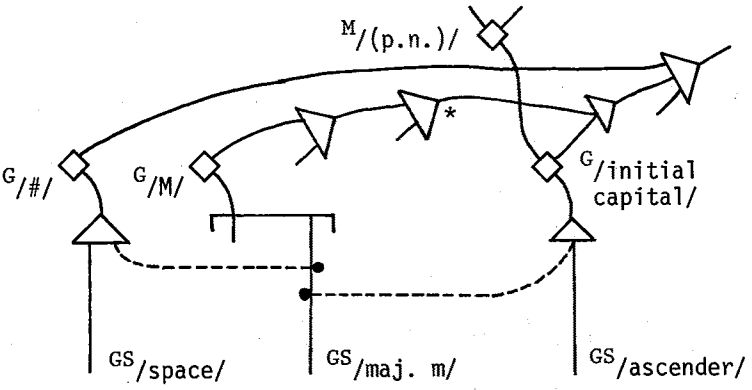


Figure 11.

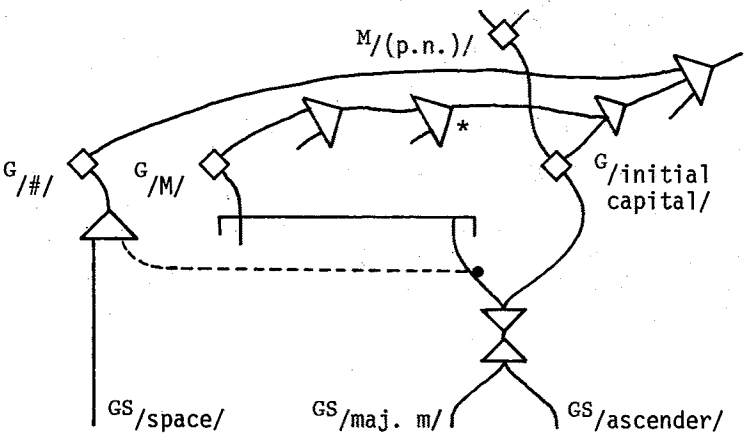


Figure 12.

is to have a capital letter and when it also occurs immediately after a space between words. However, Figure 12 has a graphemic alternation pattern like that in Figure 7 rather than like that in Figure 6.

The evidence from these two examples suggests that the network shown in Figure 7 is to be preferred over than shown in Figure 6, and that the realizations of ^G/initial capital/ and ^G/capitals/, and for similar reasons that of ^G/small capitals/, would be distributed within the graphemic alternation pattern. The realizations of ^G/italics/ and ^G/boldface/ can also be handled within the graphemic alternation pattern, using a network like that shown in Figure 13 for ^G/A/.

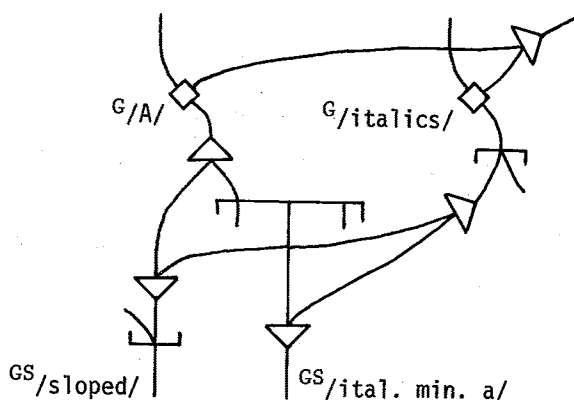


Figure 13.

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III

DISCOURSE

WHY WE NEED A VERTICAL REVOLUTION IN LINGUISTICS

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The word revolution is used here in the title of this paper to signify a radical reorientation in one's thinking in regard to a science or some other discipline. A favorite figure here is the replacement of the ptolemaic conception of the universe with the copernican conception, i.e., the replacement of an established theory in which the earth was the center of the universe with the theory in which the sun is the center at least of the solar system--only to be shown in turn that our solar system must take its place among many other systems in its galaxy and the galaxy must in turn take its place among the countless galaxies out in the depths of space. This radical reorientation of astronomy has been termed the copernican revolution.

A good starting place here is to consider the practical outcome of what has been referred to as the Chomskyian revolution in linguistics. The foment which Noam Chomsky began in 1957 has now all but quieted down. Nevertheless, that the field was profoundly shaken by him and those associated with him, cannot be denied. What may be some of the abiding results of the Chomskyian revolution? 1) Chomsky banished the specter of naive empiricism. The latter was put to me in a sociology class in my college days years ago as "find, filter, focus, follow facts". There was a good deal of this naive empiricism in U.S. linguistics of the 1940's and early '50's. Chomsky replaced this attitude with the much more adequate point of view in which there was insistence that one must have a good theory of language before one can sit down to work on any given language or any part of a language. 2) The Chomskyian approach made syntax feasible for the rank and file of linguists where it had not been feasible before.¹ I recall a remark of George Yane's in the early 1950's "Syntax--that stepchild of descriptive linguistics". In those days prior to the mid-fifties, a structural grammar of an American Indian language typically consisted of phonology and morphology with maybe two or three pages on syntax at the end of the entire volume. Nobody knew how to handle syntax in those days. 3) The Chomskyian revolution left behind it the ideal of explanatory power, i.e., we should not simply describe a language, but we should explain its features in some insightful way.

Nevertheless, there were some serious blind spots in the Chomskyian framework. These as a whole were blind spots that he inherited from Bloomfield and never challenged. For this reason, Talmy Givón (unpublished materials) has recently fallen to talking about the "Crypto-Bloomfieldian nature of Chomskyian linguistics".

The greatest of these hangups inherited from Bloomfield was inherent in the definition of grammar as a device for generating sentences. This perpetuated the Bloomfieldian blindspot in which the independence of the sentence from its context was over emphasized. Thus Bloomfield said, "It is evident that the sentences in any utterance are marked off by the mere fact that each sentence is an independent linguistic form, not included by virtue of any grammatical construction in any larger linguistic form." (1933, p. 170) This definition effectively ruled out the possibility of grammar beyond the sentence.

There were, nevertheless, occasional voices raised against this Bloomfieldian-Chomskyian restriction. In Europe there was a triangle of interaction between Prague school linguists, the Danish linguist Louis Hjelmslev, and the British linguist Rupert Firth, all of which had a certain interest in the analysis of text. Early American structuralists occasionally published an analyzed text. Unfortunately, however, this was almost exclusively an accounting for the morphological structure of words in the discourse and no attempt was made to explain the structure of the discourse itself. Zellig Harris in the late 40's evolved a methodology which he called discourse analysis (1952, 1957, 1963) which got at the content structure of a discourse but did not really approach its grammar. All these treatments of text left something to be desired.

A new beginning was made in 1958 when a young man fresh from the jungles of Peru, Jim Lloriot, wrote an article "Shipibo Paragraph Structure". This was a genuine piece of discourse grammar. It discussed ties of various sorts which gave cohesion to the discourse and features which mark beginning and end of paragraphs. The article, unfortunately, was not published until 1970 when it appeared as a joint article with Barbara Hollenbach. Nevertheless, Lloriot's article influenced many people who were studying South American Indian languages at that time. Meanwhile, Pike was insisting that we can and should go beyond the sentence (1964) and in the same year Gleason wrote a very significant article in which he stated that the grammar of a Papua New Guinea language, Kate, could better be written as a discourse grammar than as a sentence grammar. I myself got into discourse research in 1965 when three colleagues who were students of Totonac and I began to study Totonac discourse (Reid and others, 1968). This led in turn to field workshops which I held in the Philippines (1967-68), Papua New Guinea (1970), and Colombia (1974-75).

Kenneth L. Pike was also holding workshops abroad in which discourse was featured, especially in Africa (1965-66), and in India-Nepal (1972). All this rather extensive fieldwork was showing the feasibility of discourse grammars--although the right questions were not necessarily coming to the fore. Grimes in his National Science Foundation program in which he visited Brazil, Papua New Guinea, and the Philippines in the same year (1970-71) was zeroing in on some of the basic questions better than the rest of us, I feel.

Meanwhile, in Europe, men educated in the formalism of the transformational generative approach and of generative semantics in particular were getting interested in discourse. I note especially here van Dijk in Amsterdam, Petöfi in Bielefeld (West Germany) and Dressler in Vienna. A belated contribution was Prop's work which although written much earlier (1928) was not translated into English until 1958. Inspired by this and other sources, the tradition of European structuralism arose--although somewhat out of the domain of linguistics proper.

I think that much of the work cited above can be considered the opening guns of a revolution whose thesis can be stated as follows: It is not simply that systematic analysis and study of units larger than the sentence is possible, nor even that such analysis is desirable, but rather that discourse analysis is a rock bottom necessity, i.e., all linguistic structure must ultimately be related to the structure of context. In brief, to a text linguist or a discourse grammarian of this persuasion, discourse analysis is not a luxury but a necessity. It is something which we have done without too long to the detriment and impairment of the whole field.

1. In this section I want to go into the matter of tasks that a discourse grammar can accomplish that a sentence grammar cannot accomplish. Before going into this I want to pay respects to the ambiguity of the term grammar. Grammar can be used to refer to the whole study of a language in all of its aspects, or it can be used in reference to grammar proper. I intend to use it in the second sense here. Nevertheless, while I do not go into phonology in this paper, it is instructive to note what happened in the phonology of the 1940's and early 50's in the U.S., i.e., in the heyday of Bloch-Trager and Trager-Smith linguistics. An attempt was made to analyze the phonology of a language as a simple linear sequence of phonemes. In order to make this work there was resort to juncture phonemes to account for seams of phonological units, such as the syllable, phonological words, phonological clauses and sentences, and even the intonational run down found at the end of paragraphs and discourses. Here there were many clues that the phonology of a language was not a simple linear sequence, but rather involved pyramiding units in phonological hierarchy so that in the end the study of phonological context was of the greatest importance. We might too notice that, as argued by van Dijk, assignment of intonation and stress is

impossible to a sentence without taking account of its context.

We may also while we are at it think in terms of the problem of lexical structure. It seems well established by now that a lexical item has meaning only in context and that its meaning is to a large degree a function of its interplay with context. This is so strong that it can be rationally argued that the meaning of a word is not deducible within the boundaries of single sentences.

2. Now in regard to grammar proper I want to especially show some of the tasks that a sentence grammar cannot do and which require the construction of discourse grammars.

2.1 Definitivization and use of deictics

To put this as a question, when do we say a dog, when do we say the dog, and when do we say that dog, and what is the function of a, the, and that in sentences within English? Obviously, we need context to account for the meaning and function of these words. Consider the following three sentence sequence: As I stepped out of my front door, I saw a dog coming down the sidewalk. Before I knew what was happening the dog had bitten me. That dog, I learned later, had bitten three people before I came on the scene. Here we see that the dog is introduced with the indefinite article as object in the first sentence. Already, however, by the second sentence this participant has become thematic and as such is now referred to as the dog. In the third sentence the speaker of the paragraph makes a comment regarding the dog, which has already been identified and made thematic. In making this comment he refers to him as that dog--since this is an appropriate structure in such comments. Here we've had to use a three sentence sequence to explain varied handlings of the same noun in terms of the meaning and function of accompanying articles and deictics.

Patterns of this sort can be highly language specific--even if certain overall universal features are found. Thus for Bahasa Indonesian Don Barr (1976) says that three steps are necessary to establish a participant in a Bahasa Indonesian narrative discourse. "1) A participant is introduced by formula: se-orang, 'one-person', plus noun phrase, often further described in clauses introduced by yang (a relative particle). 2) The next reference is usually by noun phrase plus ini ('this'). 3) A further reference is by noun phrase plus itu ('that')." Thus, in a narrative about a woman's falling into the hands of thieves, she is first introduced as

<u>se-orang</u>	<u>perempuan yang berbadan kecil molek berdandan</u>
one-person	female who had body small pretty dressed
(num. class.	
for people)	

<u>bagus dan beperhiasan</u>	<u>cukup,</u>
well and wearing jewelry	enough

After being referred to as above in the first sentence of the discourse, in the next sentence she is referred to as

perempuan yang baru datang ini,
woman who just came this

and later on in the same sentence is referred to as

perempuan itu.
woman that

In these three stages the woman is established as a major participant in the narrative. English does this in two stages, a dog and the dog. In Bahasa Indonesian it is a three stage affair with the demonstratives not being saved for special functions such as narrator comment (as in English). Continuing further references to a participant such as the one introduced above is varied and consists of pronouns, noun phrase plus itu, affixing of -nya to the participant, and use of certain further particles. It is not within the scope of this paper to go into these matters in detail, but they can be accounted for by resort to the on-going structure of the discourse.

2.2 Pronominalization

The linguist is considerably cramped when he tries to explain the occurrence of pronouns within the limits of a single sentence, although some very important work has been done in this direction by such people as Langacker within the transformational generative tradition. The difficulty is that pronominalization chains commonly run through several sentences. Furthermore, the paragraph is the natural unit of such anaphoric chaining in English. Thus, we may start off with John Smith and have in successive sentences he, his, him, down to the end of the paragraph, while sometimes the pronominalization chain may continue across the paragraph boundary, although it is not at all uncommon for the noun to be reintroduced at the onset of a new paragraph.²

One rather puzzling phenomenon in English and a phenomenon which cannot be accounted for at all within the boundaries of a single sentence is that of backward pronominalization. Thus, when is it appropriate to say When he came to power, Augustus. . . versus When Augustus came to power, he. . .? There certainly is no ambiguity in either case, but again we must appeal to the context to know which to use. Robert Kantor (1976) has recently pointed out that if we say When he came to power, Augustus. . . we then proceed in this sentence and in the following sentences to establish Augustus as thematic. We talk about what he has done or what he did while he had the power. If, on the other hand, we say When Augustus came to power, he. . ., we proceed not to make Augustus thematic in the paragraph, but rather some other noun, i.e., his, works, his program, the progress of the empire under him, etc.

In languages other than English, i.e., in languages where there is an indication of the person and number (and even sometimes of the gender) of the subject on the verb itself, pronouns are not used at all in the way that they are used in English. Pronouns are simply not needed for continuing participant reference. Rather, pronouns when used, have other more specialized functions such as topicalization and contrast. Thus, if one takes a short story in Spanish and compares it with a good translation of the same story in English one finds at least four times as many pronouns indicating subject in the English version as one finds in the Spanish version.

Spanish has however, frequent use of pronouns to indicate direct and indirect objects in conjunction with the verb. One has to look at non-Indo-European languages which mark faithfully person, number (and sometimes gender) of both subject and object to find examples of systems which get on with even less use of pronouns. Such a language is Totonac of Mexico (data from Aileen Reid). In Totonac pronouns are not used at all as in English, i.e., they are not used for continuing anaphoric reference. This is taken care of rather by features of the verb morphology. Instead, Totonac uses pronouns for special function and in fact such special function is almost entirely limited to the vicinity of quotations and the quote formulas which accompany them. If a narrative has no reported speech or dialogue it will get on without pronouns. If it has reported speech and dialogue then it will employ pronouns extensively. The use of the pronouns will correlate with such factors as relative emotional intensity of the dialogue, dominance of one speaker over the other, and marking of thematic participant in the dialogue paragraph.

Guambiano of Colombia (data from Thomas Branks) is a further example of a language which uses pronouns in a very different way from English. Guambiano, like so many languages of the same area of the world, keeps track of same subject versus different subject in successive clauses, whether in or across sentence boundaries by affixes on the verb. In a simple narrative discourse with two participants (i.e., a protagonist and an antagonist) one and only one participant is referred to pronominally. If it is a first person narrative, the narrator refers to himself as 'I'; if it is a third person narrative, the central participant (the protagonist) is referred to in a third person pronoun. Very important, however, to the structure of such Guambiano narratives is the relative directness of the narrative. Thus, if the person narrating the story heard it from another person, then the 'I's of the original story will become third person in the narrator's version of the story. This transformation of first to third person is not entirely complete, however, in that there is an occasional use of first person in a structure that is somewhat intermediate between a direct and an indirect quote. If, on the other hand, the story is third or fourth hand, the first person pronoun will not occur at all--unless in a direct quote--and the third

pronoun will refer only to the central character, i.e., in such a story the central character will be referred to by third person pronoun and the antagonist will be referred to entirely by noun and never pronominalized. So it is evident that in Guambiano to use pronouns correctly one must know the slate of participants for a discourse--with identification of the central character within that slate of participants--and one must also know the relative closeness of the narrator to the events which he is retelling.

2.3 Use of tense, aspect, mode, and voice

While the preceding two considerations deal with details of participant reference, and hence with the use of noun and pronoun in connected discourse, the present section deals with features of verb structure and their relation to context.

The analysis of verb morphology in a language which is under study for the first time may be a formidable and time consuming job. Sorting out the markers of the various tenses, aspects, and modes, the various allomorphs of each marker, as well as the co-occurrence privileges of these morphemes and allomorphs can be a long and difficult task. When such analysis is complete, one is presumably able to form correctly the verb structures of the language. But then the further question arises 'When does one use one form in preference to another?' While one can learn something from this by the study of isolated sentences, an adequate understanding of the uses of various forms of the verb in a given language must take into account structures other than those found within a single sentence.

This is true even of a language such as English which has a relatively simple tense-aspect-mood system. Compare the following paragraph of a contemporary novel (*The Final Diagnosis*, Arthur Hailey, p. 31):

Now McNeil slipped on his own gloves and went to work with Pearson. By this time, moving swiftly, the older man had peeled back the chest flap and, hacking the flesh loose with a larger knife, exposed the ribs. Next, using the sharp levered rib cutters, he cut his way into the rib cage, exposing pericardium and lungs. The gloves, instruments, and table were now beginning to be covered with blood. Seddons, gloved also, on his side of the table, was cutting back the lower flaps of flesh and opening the abdomen. He crossed the room for a pail and began to remove stomach and intestines, which he put into the pail after studying them briefly. The odor was beginning to be noticeable. Now Pearson and Seddons together tied off and cut the arteries so the undertaker would have no trouble when it came to embalming. Taking a small tube from a rack above the table, Seddons turned

on a tap and began to siphon blood that had escaped into the abdomen and, after a nod from Pearson, did the same thing for the chest.

A variety of tense forms are used in the above paragraph: past, past progressive, pluperfect, conditionals which refer to the future, participles, gerunds, and infinitives. Of these tenses, however, there is a position of privilege given to the past tense. In English as in many other languages, there is a special tense in which a story is customarily told. In English (aside from use of the historic present in special discourses and special contexts within discourses) a story is customarily told in the past tense. The past tense forms can be considered therefore to be the backbone of English narration. Thus, in the above paragraph this backbone or event line is marked by the verbs slipped, went (to work), cut, crossed, began (to remove), put, tied off, cut, turned on, began (to siphon), and did. The other tenses that occur are doing more specialized jobs. Thus, pluperfects mark activities and events that occurred earlier in the procedure and which now are reported out of chronological sequence: The older man had peeled back the chest flap. . . and (had) exposed the ribs. And later in the paragraph: . . . Seddons. . . began to siphon blood that had escaped into the abdomen. The past progressives mark concomitant happenings and activities: The gloves, instruments, and table were now beginning to be covered with blood. Seddons. . . was cutting back the lower flaps of flesh and was opening the abdomen. . . The odor was beginning to be noticeable. One sentence contains references to a course of action which is future in reference to the procedure described in the paragraph (an autopsy): . . . so the undertaker would have no trouble when it came to embalming. Here the grammar of the language requires a modified future would have and a subjunctive which is homophonous with the past, came. A few participles and gerunds (all -ing forms) round out the sentences of the paragraph: moving, hacking, using, exposing, studying, embalming--as well as some infinitives. These verbals (non-finite forms) act as attributives, nominals, and verb complements within the sentences where they are found.

In analyzing such paragraphs as above the crucial move is, however, to identify the backbone or event line as opposed to other parts of the narrative. Tense does not, however, do this trick too well in English. Particularly diagnostic of background and descriptive material in many languages is use of the verb to be even if in past tense, i.e., even if in the regular form of the event line verb. Furthermore, even though background verbs can be past progressive, there are some verbs which reject this form even when background. For example, we get he knew rather than he was knowing and he felt rather than he was feeling. There is therefore some residual ambiguity in the use of such a verb as he knew, i.e., does the writer or speaker mean he came to know, he realized, or is he describing a state of mind? Conceivably, coming to know something could be an important event in a story.

Latin, Greek, Romance, and Slavic use tense/aspect in a more consistent way than English to distinguish backbone versus background. Wallace Reid (1976) and P. Hopper (1977) have pointed out that the function of the much discussed French imperfect is to background non-event line material. Hopper has further pointed out that this is the regular function of imperfects or imperfectives in such languages as those cited above.

Consider the following rather lengthy passage from Spanish (Cervantes, in Flores, 1960, p. 64-66).

En Toledo, una noche de las calurosas del verano, regresaban de dar un paseo cerca del río, un anciano hidalgo con su mujer, un niño pequeño, una hija de edad de diez y seis años, y una criada. La noche era clara, la hora las once y el camino solitario. Con la seguridad que promete la mucha justicia y la bien intencionada gente de aquella ciudad, venía el buen hidalgo con su honrada familia sin temor de que le pudiera ocurrir nada malo. Sin embargo en aquel momento coincidió en pasar por allí un mancebo de aquella ciudad, llamado Rodolfo, de unos veinte y dos años de edad, cuya riqueza, viles instintos, sangre ilustre, demasiada libertad y malos compañeros, le habían estimulado a hacer cosas que desdecían de su calidad y le daban renombre de atrevido. Rodolfo, pues, con cuatro amigos, todos mozos, todos alegres y todos insolentes, bajaba por la misma cuesta que el hidalgo subía--así es que las ovejas se encontraron con los lobos.

Con deshonesta desenvoltura Rodolfo y sus camaradas, cubiertos los rostros, miraron los de la madre, y de la hija, y de la criada. El viejo se alborotó y les reprochó su atrevimiento. Ellos le respondieron con muecas y burlas, y pasaron adelante. Pero aquel rostro tan hermoso de Leocadia, que así se llamaba la hija, despertó en Rodolfo tal deseo de gozarla que en un instante comunicó su pensamiento a sus camaradas que en seguida decidieron volver y robarla para darle gusto a su amigo; pues siempre los ricos por ser ricos hallan quien apruebe sus desafueros y califique por buenos sus malos gustos. Cubriéronse los rostros y, desenvainadas las espadas, volvieron y pronto alcanzaron al hidalgo y su familia que habían acabado de dar gracias a Dios por haberlos librados de las manos de aquellos atrevidos. Arremetió Rodolfo con Leocadia y, cogiéndola en brazos, huyó con ella.

In the above passage, noting the distribution of preterites or simple past tense versus other types of tense, we can see at a glance that the first paragraph is mainly background material, while the second features events. Thus, in the first paragraph

there are only two simple past tenses occurring about paragraph medial and at the end of the paragraph: coincidió (en pasar) 'chanced (to pass)' and se encontraron 'met up with'. Imperfects in this paragraph describe the background: regresaban 'were returning', era 'was', venía 'was coming', desdecían 'detracted', daban 'gave', bajaba 'was going down', subía 'was going up'. There is one pluperfect in the paragraph habían estimulado 'had provoked' which refers to incidents in the life of Rodolfo before this story starts. There is a present tense promete early in the paragraph which makes a general statement as to the security of the city. There is a past subjunctive form pudiera 'could' which is appropriate to its immediate context.

By contrast with the above paragraph, much is going on in the part of the second paragraph which is reported here. There are a great many verbs which refer to event line material: miraron 'looked on', alborotó 'got indignant', reprochó 'scolded', respondieron 'answered', pasaron 'passed on', despertó 'aroused', comunicó 'told', decidieron 'decided', cubrieronse 'covered', volvieron 'returned', alcanzaron 'caught up with', arremetió 'sized', huyó 'fled'. Only one imperfect occurs: se llamaba 'was named' in an obvious aside from the story line. A pluperfect occurs to mark an action again reported out of chronological sequence: habían acabado 'had finished (giving thanks to God for delivering them)'. Again a present tense occurs in a general statement which is an author comment: hallan 'find' (in the statement 'thus the rich always find those who will approve of their misdeeds and account as good their bad actions'). A couple of subjunctives appropriate to the local context occur in the sentence just referred to. Notice it is the movement of the story and the type of information involved that dictates the choice of tenses here even to a greater degree than in English.

As to the school book definition of the imperfect as continuous action in past time, while this is a frequent function of the imperfect, in that it describes material off the event line, such a definition by no means summarizes all uses of the imperfect in narrative. Consider the following brief passage from a short story (*L'aventure de Walter Schnaffs*) by de Maupassant in French.

Soudain quelque chose remua contre lui. Il eut un sursaut épouvantable. C'était un petit oiseau qui, s'étant posé sur une branche, agitait des feuilles mortes. Pendant près d'une heure, le cœur de Walter Schnaffs en battit à grands coups pressés.

In this paragraph, the verbs in the *passé simple*, which marks the backbone of the discourse, are remua, eut, and battit. The verbs était and agitait in the imperfect fulfill their customary function of background material, i.e., they fill in the reader as to the nature of the event which so startled the character in the story. Notice, however, the inadequacy of attempting to define

the choice of tense in the above passage in terms of the type of activity, i.e., punctiliar versus continued activity. The imperfect verb agitait does not necessarily indicate a continued action. On the other hand, the passé simple verb battit in the last line certainly represents an action which went on for some time, because we are told very explicitly that 'for the better part of an hour the heart of Walter Schnaffs beat in great hurried strokes'.

The need for a discourse oriented theory of tense/aspect is even more acute in languages with more complicated systems of tense/aspect than are found in most European languages. Thus, in the Camsa language of Colombia, Linda Howard (Longacre and Woods, 1977.2.273-296) reports three distinct forms of past tense verbs. This distinction correlates with the distribution of these tense forms in the backbone material of three distinct types of narrative. In the legend narrative, which deals with events in the remote past, background verbs are prefixed with yoj-. In the historic narrative, which deals with events within the recollectable past, backbone verbs have toj- . . . an- prefixes. In the contemporary narrative, backbone verbs have toj- prefixes. Quite distinct from all these verb forms which are found in the backbone of narrative discourses, is the type of verb found in procedural discourse, whether giving how something was done in orderly stages or how it is to be done in orderly stages. Verbs in the backbone of discourses such as these have prefixes j- . . . na- and are termed by Howard 'infinitives'. It is also possible to specify to some degree the type of material which is found in non-backbone material in Camsa as well, but I cannot go into detail here. Suffice it to say that what marks the backbone in one discourse type may prove to be off the backbone in another discourse type.

The matter of distribution of voice also calls for a discourse interpretation. While there have been many ingenious suggestions made for the meaning and function of passive voice in English, the simplest and most adequate one has to do with the needs to preserve thematicity in discourse, i.e. the twin strategies of (1) making what would have been the object the subject of a passive verb (and hence thematic) and (2) the desire to omit mention of the agent (who is presumably non-thematic).

While English uses genuine passive voice to preserve thematicity, a language such as Totonac (data from Reid) in Mexico uses an affix which suppresses the identity of the subject so that in effect we have 'someone did this' or 'someone did that'. Thus the Totonac suffix -ca/-can is of paramount importance in matters of establishing and preserving thematicity in Totonac discourse.

The moral of all this is that the study of the distribution and function of tense, aspect, mode, and voice in discourse can enable us to come up with a theory of considerable explanatory

power. The various forms of verbs can be shown to be subservient to the needs of discourse and occasioned by those needs.

2.4 Word order phenomena

Word order variation within a language cannot be adequately described without resort to discourse considerations. That this is true has been evidenced in the work of Prague school linguists such as Firbas and Daneš for some time (Daneš, 1974). They have shown that in some languages such as Czech there is a distribution of elements in the clause according to the amount of 'communicative dynamism' that each part of the clause conveys. The less dynamic parts are put earlier in the clause and the more dynamic are put later. Thus old information regularly goes in the beginning of the clause and new information toward the end, according to the familiar theme-rheme division of these linguists. Obviously, whether one knows whether a given item is old information or new information or whether a certain item is relatively important or less important to the communication situation requires resort to context.

Most Otomanguean languages of Mexico have a basic VSO word order with a possibility of rotating either subject or object to the fore of the verb. Obviously the permutation of the noun phrase to the fore of the verb has some sort of topicalization or thematization function. It is, however, quite rare in some languages and reserved for special purposes. Thus in Trique a frequent use of the preposed noun phrase is to highlight some unexpected participant. There is a text where a man is pushed into an underground pit by his wife and stays there for seven years. Suddenly we are told that crows lowered him down things to eat--and 'crows' is moved to the fore of the verb. It is evident here that the crows constitute a minor participant in the discourse in that they are mentioned only in this clause and nowhere else in the entire story. Furthermore, when first mentioned here they are entirely rhematic and new. In fact this passage may even be a digression from the event line of the story--a digression whose purpose is to tell how the man managed to eat during the years of his being in the pit. At any rate, it does not seem to carry the event line of the story forward. Further on in the story, the man's rescuer appears and asks him how he came to be in the cave. The man answers 'it was my wife who brought me here and left me'. The fronting of the word 'wife' here both harks back to an earlier stage of the story and also in the context of quotation in which it occurs highlights the wife in a rather unwonted and surprising role, i.e., it is not (fortunately) the usual thing for wives to attempt to murder their husbands.

There are certain Cayapa texts (language of Ecuador, data from Neil Wiebe) which show still another function of word order permutations. Cayapa is an SOV language, like most of the languages of this part of South America. There is a series of texts

in which various animals one by one beat the tiger in various contests. The animals are all unlikely victors such as a fly, a snail, etc. These texts are essentially two participant stories. In such stories rather consistently the tiger or his protagonist are moved to a position following the verb. What is interesting in these discourses is the fact that usually the protagonist of the tiger is rotated to the post verb position early in the discourse while the tiger himself crops up in post verb position late in the discourse. The permutation seems to have to do with which is featured as the under dog in the conflict. As long as the tiger is the aggressor (and because of his weight and ferocity the probable victor), it is his protagonist who is featured in post verbal. But as soon as the tide begins to turn, and the tiger is to be defeated, then the tiger himself will crop up in post verbal position. In one or two of these discourses at the point where the conflict is squarely joined, both participants are permuted to post verbal so that in place of the SOV order which is normative, we get a VOS order. In such cases there is a special phonological juncture after the VO and before the S--a feature which labels this as an unusual word order.

Hopper in a recent paper (1977) has made some very interesting observations about event line versus supportive material in Anglo Saxon and has shown how this is marked by word order. Event line clauses are those in which the verb is peripheral to the clause, i.e., it is either initial or final. This, I assume, means that we find event line clauses to be either VSO or SOV. Background material, however, has the subject before the verb and presumably includes SVO clauses. Of interest here is the fact that the chain of backbone clauses begins with the VSO order and evidently continues with the SOV order. Here we have a way in which the beginning of a chain of clauses is marked with a special structure in the initial clause. It is the converse of languages of Papua New Guinea and many at the northern tip of South America where we find a special kind of verb (often called the 'final verb') which marks the end of a chain of clauses.

Hebrew presents a further variation on word order conditioned by discourse considerations. Hebrew has a special event line form of the verb, the so-called *waw*-consecutive which has been recognized since 1910 by Gesenius (p. 326) as a narrative tense. When this tense is used, the word order is VSO or occasionally VOS. What this backbone tense does not tolerate is the preposing of any noun to the verb. When any noun is preposed to the verb, we must revert to some other tense. My own studies in Hebrew discourse of the Old Testament (Longacre, 1976a, 1977) have convinced me that the clauses which have initial nouns (whether subject or object) are off the event line of a story. Thus we find VSO order (or occasionally VOS) on the event line, but SVO or OVS off the event line. The distinction correlates with what was called by the Arab grammarians nominal clauses versus verbal clauses, i.e., the verbal clause has an initial verb and a nominal clause has an

initial noun. In terms of the dynamics of narrative discourse, a clause with an initial verb is featuring the action and is on the event line, while a clause with an initial noun is featuring some participant and is a digression from the event line in order to talk about that participant.

2.5 Use of location and temporal expressions

Attention in the above section has centered in the positions of verb, subject, and object relative to each other. Obviously, clauses have other elements as well, not the least of which are expressions of location and time. We may consider that the verb, subject, and object are nuclear to the clause and that the location and temporal expressions (along with such further units as manner) are optional and peripheral. But to call them optional obscures entirely their discourse function. In terms of the function of connected discourse, such phrases are not optional, but are called for at certain places in the discourse.

Thus, temporal expressions may serve to move a discourse forward in time as a story sweeps through progressive time horizons. Similarly, a series of locational expressions may indicate a trajectory of a travelogue or the march of an army. In either case, whether a series of successive times are indicated in various parts of the discourse, or a series of locations, such elements belong to the fundamental framework of the entire discourse and occur in various component clauses of that discourse as the design of the whole requires their occurrence.

2.6 Uses of adverbial clauses

In most languages subordinate clauses which are adverbial in thrust occur along with the independent clauses on which they depend (cf. Thompson and Longacre, 1978). Some of these clauses are preposed to the main clause, others are postposed. A few such clauses in discourse have merely local relevance, i.e., they have to do only with the sentence in which they are found and add to that sentence some detail, but are not echoed or referred to elsewhere in the entire discourse. For example, in a scientific essay adverbial clauses which are chiefly bibliographical in reference, are of this nature, e.g., as X (date) has shown, or as X and Y (date) have observed. On the other extreme from this, some adverbial clauses function clearly to preserve discourse movement and perspective. Thus in a travel book on Mexico adverbial clauses in various functions are used by the author to constantly remind the reader of the you-are-on-a-journey perspective of the entire discourse. Thus we have adverbial clauses like as you walk through these huge chambers, after seeing this underground fairyland, as your car moves on, wherever you go in Taxco, as you browse about the village, and as you prowl up and down the narrow streets. These adverbial clauses and other similar features of the discourse serve to preserve the pseudo-procedural form of the

whole, i.e., the discourse is given as if you were on a guided tour through the regions and towns which are mentioned.

Adverbial clauses may also be used to give cohesion between successive paragraphs of a discourse. A frequent device here is what might be called tail-head linkage, i.e., something mentioned in the last sentence of the preceding paragraph is referred to by means of backreference in an adverbial clause in the following paragraph. Thus one paragraph might end, Finally, exahusted with trying to figure the situation out, John drifted off to sleep. The next paragraph might begin, When he had been asleep only a short time. . . Very similar to this is summary head linkage, i.e., the first sentence of a successive paragraph has a clause which summarizes the preceding paragraph. Thus one paragraph may involve description of a variety of activities and the next paragraph may begin When he had done all these things or something to that effect. Or we may be in an explanatory discourse where an argument is presented in one paragraph and the following paragraph begins As the preceding argument indicates.

Especially relevant is the function of adverbial clauses in connecting sentences within the same paragraph. Here there is such a variety of connections that we can give only a brief sample of a few possibilities. A backreference by means of a when clause may serve to connect a sentence to previous context in the same paragraph. In many languages of the Philippines and Papua New Guinea the use of such backreference is so common that each successive sentence in a sequence paragraph builds on the preceding by some such device as 'having x-ed', or 'when he had x-ed', or 'after he had x-ed, he y-ed'. English has such a variety of conjunctions that is not as dependent on backreference as are some languages in other areas of the world. It therefore uses backreference with much more discrimination. A backreference in an English paragraph is more likely to mark something special, often the climactic sentence of the paragraph.

In the same way, a while clause may be used in the ensuing sentence to refer back to the preceding sentence and thereby make the action of both sentences simultaneous. Thus we have a paragraph like: Mary came home, put the hamburgers on to fry, put the french fries to warm in the oven, and set the tea kettle on the back of the stove. While doing all this she kept nervously watching the clock. Here the While doing all this, summarizes the actions described in the preceding sentence. Cause clauses can be used for similar linkage in sentences, e.g., what is expressed in a cause clause in the first sentence, can be amplified in the following sentence, as in the following paragraph translated from Dibabawon: 'But it was the same as if he had recovered from his illness, because he became famous by riding in an airplane. There is no other old man who has ridden in an airplane; he's the only one.' Here the second sentence amplifies 'because he became famous by riding in an airplane' of the first sentence.

While this is but a sampling of the function of adverbial clauses in providing various sorts of cohesion within discourse, these examples should serve to make the point that if we are to understand the function of adverbial clauses we must look at more than isolated sentences, but must see their function in on-going contexts.

2.7 Sequence signals and conjunctions

It seems evident that conjunctions and sequence signals, whose job is to fit a sentence or a sequence of sentences into a broader context, can never be explained simply as part of the sentence to which they happen to belong. Indeed it may be argued that they are mainly phonologically part of their sentences more than grammatically part of them and that they more properly belong to the larger context. English has not only such conjunctions as and, but, however, nevertheless, and therefore which serve to fit sentences into context, but also many other signals (often phrasal, or sentence adverbs) such as obviously, on the other hand, alternatively, consequently, etc.

An experiment of mine several years ago in generating a discourse from its abstract (Longacre 1976b) was very instructive in regard to the role of conjunctions in discourse. I first reduced a short text to its general idea, which I expressed as a line of symbolic logic. Then I tried to generate the entire discourse from this abstract by a set of ordered generative rules. In my first compilation I generated each sentence more or less independently of the others and I left for a later stage the job of conjunction insertion. I found to my consternation, however, that it was impossible to insert the conjunction at a later stage of the rules--since I had not already provided for their introduction earlier. I had to go back then and provide for conjunction insertion very early in the generation of the component paragraphs of the discourse. Conjunctions, then, are no trivial additions to a paragraph and certainly are not after thoughts. They belong to the central structure of paragraph and discourse.

2.8 Nominalization and topicalization

Most languages provide ways to nominalize a verb or for that matter a whole clause. Languages differ greatly, however, in the frequency and function of nominalization. Thus, in English discourse sometimes the purpose of nominalization seems to be to shunt something off the event line or to in some way push it away from the spotlight. In keeping with this it is not to be wondered at that backreference in English sentences often prefers a nominalized form of the verb to a full verb. Thus we may have a two sentence sequence John took off in his piper cub promptly at 9:00 a.m. The next sentence may go on to say After he took off he noticed that the engine of the plane was not acting normal. But it seems somewhat more frequent and natural in English to use such nominalizations as After taking off, . . . or After the take off, . . . or even While in flight, . . . than to use the finite verb

After he took off. . . for the backreference.

The function of nominalization in the Tucanoan languages of Colombia is very different, however. In these languages nominalization is not as common as in English and when it does occur, its function is not to shunt an event away from the spotlight, but to spotlight it. In keeping with this Nate Waltz (1976) notes that we often find nominalization at the peak of a story, i.e., at its high point.

Nominalization sometimes appears to be especially characteristic of certain genres in a language. Thus an Aguaruna expository discourse has as its backbone nominalized forms. To quote Larson (1978, 133), "The classifiers form the backbone of the network. Actually they may be actors, i.e., they classify a thing as having the characteristics of a certain action. In the surface they are realized by nominal forms, even though an action is referred to. It seems clear, after studying numerous expository texts in Aguaruna, that the deep structure concept is that of 'one who does such and such' and therefore the term classifier." Similarly, in Tarahumara expository and procedural discourse (data from Don Burgess) we also find nominalized forms of verbs to be an important part of the backbone structure.

Topicalization devices, while they have been described in detail for some time in contemporary linguistics, have lacked explanation as to contextual appropriateness. Thus, why is it strategic at a certain point in a travelogue discourse to say, It was Cortez who discovered the silver and started the mines which made this village thrive and still keep it going, rather than just saying Cortez discovered the silver and started the mines. .? Why is it similarly appropriate in the following paragraph to say But it was José de la Borda who made a real town out of the mining camp of Cortez's day. . .and in the next sentence of the same paragraph It was also Borda who built the huge church whose twin spires tower above all the other village buildings? It seems that in the context referred to above, one of the aims of topicalization is to contrast Cortez's role with José de la Borda's role in building of the town of Taxco. Linda Jones (1977) has recently made a good beginning at explaining the role of such devices as those exemplified above in marking thematicity in various hierarchical layers of a discourse. Obviously, such devices as those exemplified here must be explained as to contextual appropriateness. Otherwise, the linguist who simply taxonomically-transformationally describes such structures is in the position of one who is able to describe the verb forms of a language without any knowledge of their function.

2.9 Variation in reported speech

Reported speech, whether in isolated speech acts or (as is more common) developed as dialogue, is important to narrative

structure in most languages. While in some languages the form of recorded speech, whether in isolated utterance or in dialogue, is very stereotyped, in others there is considerable variety. To begin with there is the question of direct versus indirect quote which is an option available in most languages--although by no means in all. There are some languages (e.g., Agta of the Philippines and some Zapotec dialects of Central America) where only direct quotes are possible. Then there is the matter of the presence or absence of the quote formula (he said. . .). There is a further question in many languages of the position of the quote formula. Is the quote formula preposed to the quotation? Or is it postposed? Or is it both preposed and postposed? Or may the quotation itself be broken and the quote formula interlarded? ("Fine", he said, "Let's go.") How do all three possible quote positions relate to each other? Finally, there is the intricate matter of the nature of the quote formula. In a language such as Totonac (data from Aileen Reid) where the verb marks in its morphology both subject and object, there are six possible options for a quote formula. 1) verb, 2) verb plus noun indicating speaker, 3) verb plus noun indicating addressee, 4) verb plus nouns which indicate both speaker and addressee, 5) verb plus suffix ca/can (which means 'indefinite, unspecified subject of the clause'), and 6) verb plus ca/can plus noun indicating addressee. Only a theory of discourse can sort out these many variations in reported speech according to the parameters mentioned above.

Thus, in a language where there is frequent use of both direct and indirect quote, the contextual conditions under which one is used rather than the other, must be specified. Similarly, the presence or absence of quote formula must also be examined according to its contextual appropriateness. We often find, for example, that a story may be characterized by rather careful use of quote formulas until we get to the peak of the story at which point the story may drop the quote formulas and report the speech in what is, in effect, a more dramatic style. Or we may find that quote formulas are used early in a dialogue until the identity of the alternating speakers is established, after which point the quote formulas are dropped.

The matter of the position of the quote formula also calls for contextual specification. We may find for instance that the use of a postposed quote formula closes more than simply the quotation itself, i.e. that it may also close a section of dialogue, or even an episode of the story.

Finally, there comes the difficult question of the nature of the quote formula itself. Current work into the nature of the quote formula in Totonac shows that at least the following factors must be taken into account. (a) The nature of the dialogue. Is it a highly emotional dialogue or a comparatively placid one? (b) Does one participant dominate the dialogue or are both participants on an equal footing with each other? (c) Are we at the beginning or at the end of a stretch of dialogue,

and do the quote formulas as used indicate some of these transitional features? Thus, in regard to the first factor, the nature of the dialogue, if the dialogue is highly emotional we can expect to have both preposed and postposed quote formulas and the speakers will be identified by a noun in both. As to the second factor above, the dominance of the speaker or addressee, the dominant person in the dialogue will be mentioned frequently and the other person only seldomly. As to the third factor above, it can also be noted that at the beginning of a dialogue the identity of the speaker may be suppressed by means of a ca or can on the Totonac verb so as to make plain that the addressee is thematic in the dialogue which follows. Or if the speaker is introduced first and then his identity is suppressed by means of a ca or can on the Totonac verb and the addressee identified, this indicates that the two speakers are on somewhat equal footing in the dialogue. At the conclusion of a dialogue if a quote formula suppresses the identity of the speaker in favor of the identity of the addressee, this is an indication that the speaker will not be thematic in the following section, but the addressee will be thematic. (oral communication from Aileen Reid).

2.10 Variation in the length of syntactic units

A further consideration is variation in the length of syntactic units, especially of the sentence itself. Thus, out of context we find we may cite very short sentences or we may cite very long sentences. Are there contextual features which dictate choice of sentence length?

In many New Guinea highland languages where there is a feature of clause chaining which may consist of a great many medial verbs in medial clauses followed by a final verb in a final clause, there is a striking difference in discourse genre at this point. For example, in narrative and procedural discourse in such languages as *Foré* and *Waffa* we find extremely long chains with a final verb at the end. (In some such languages, notably *Foré*, the chain is so long that it really patterns as a paragraph rather than as a sentence and certain sub-chains within pattern as sentences). But in expository and hortatory discourse in the very same languages, chains are not built to any great length but may consist of only one or two clauses. The difference is so pronounced that one is almost tempted to wonder if he is in the same language. Somewhat the same situation is true of certain South American languages which also have pronounced chaining characteristics, noticeably *Aguaruna* of Peru (Jarson, 1978, p. 159).

Sentence length may also be conditioned by placement in the discourse. Thus, Hemingway is known for his short crisp sentences, yet he may at the high point of a story write a sentence that can go for half a page. Thus at the climax of Hemingway's story 'The Short Happy Life of Francis Macomber' the central participant's wife (accidentally?) shoots him dead as he faces an on-coming bull.

This is reported in the following sentence.

Wilson, who was ahead was kneeling shooting, and Macomber, as he fired, unhearing his shot in the roaring of Wilson's gun, saw fragments like slate burst from the huge boss of the horns, and the head jerked, he shot again at the wide nostrils and saw the horns jolt again and fragments fly, and he did not see Wilson now, and aiming carefully, shot again with the buffalo's huge bulk almost on him and his rifle almost level with the on-coming head, nose out, and he could see the little wicked eyes and the head started to lower and he felt a sudden white-hot, blinding flash explode inside his head and that was all he ever felt.

A similar way of marking the peak, i.e., by resort to a long run-on sentence has been observed in a New Guinea language, Wajokeso. The opposite possibility, namely resort to short crisp sentences which contrast with former long sentences can also be documented in some language as a feature marking peak.

2.11 Mystery Particles and Affixes

Many times in studying a language we find that there are certain particles of uncertain meaning which cannot be defined by the language helper, who nevertheless, insists that he wants them used at certain points and not used at others. Almost invariably such particles of apparently random distribution are subject to discourse constraints.

The Guajiro language (Mansens, 1976) of Colombia has a system of auxiliary verbs, which seem, on initial investigations to be rather vague in their meaning. Two of these auxiliaries are especially important to the structure of discourse. Thus, the auxiliary verb calacá, when it occurs on the verb of a clause, marks an important event of the story. It does not occur in a paraphrase of that main event. Thus, if we are told in a piece of folklore 'The tree thickened back to the thickness that it was before' the verb 'thickened' will have the auxiliary calacá on it. That is an important event in the progress of the story. If, however, the next sentence goes on to say 'In fact, it grew to be thicker than it had been in the first place', this further added information will not merit an occurrence of calacá. Similarly, in a dialogue where two people are talking to each other and what they say is considered important to the progress of the story, if one of them speaks an aside to a third person and the aside is of comparative unimportance, then the verb 'say' (of the quote formula) will not have a calacá in that situation. But the verb 'say', which introduces quotes from the characters whose dialogue is on the main line of the discourse, will be characterized by occurrence of calacá. The auxiliary verb taa similarly has discourse functions. It marks the subject of whatever verb it occurs with as the thematic participant of the paragraph. The

rules governing its use are too intricate and detailed to state here. The two auxiliary verbs together serve to keep track of the main events and the participant reference structure.

In Totonac there is a mystery particle tza? (data from Ruth Bishop) which has a rather different function. Tza? does not mark either of the two functions mentioned for auxiliary verbs in Guajiro in the past paragraph. Rather tza? marks important background information that is not on the event line, but on which an event of the event line builds. So tza? marks background material of a specially privileged status.

Occurrence of such particles as here exemplified for Guajiro (of South America) and Totonac (of Mesoamerica) are by no means rare. The linguist who encounters them in a given language, if he has not seen similar particles marking discourse functions in other languages, will initially be tempted to feel that such particles are randomly distributed. Actually, however, one of the hardest theses to prove in all linguistics is that 'there is no structure at this point'. Patient discourse analysis will uncover discourse function of particles of the sort which we have here illustrated.

3. Conclusion

This paper has tried to document on a broad front the thesis that understanding of many details of linguistic structure is dependent on the analysis of discourse. Discourse analysis is, I believe, one of the most exciting frontiers of contemporary linguistics. What I would like to suggest is that all of us from various backgrounds and linguistic traditions unite in the common enterprise of discourse analysis. We can bring to bear in this enterprise all the tools and insights of various schools of grammar: transformational-generative grammar, stratificational grammar, tagmemics, systemics, computational linguistics, and even artificial intelligence. The common task will in fact, carry us beyond the frontiers of linguistics itself and land us at the crossroads of linguistics, sociology, psychology, and perhaps several other disciplines. In view of the challenge of the new frontier, continued preoccupation with differences between us seems to be anachronistic. The discourse grammarian typically finds that he has more in common with another discourse grammarian of a different approach than his own, than he does with someone of his own approach who is not interested in the study of discourse.

We have, in effect, a new continent to explore and subdue. In the exploration of this continent I believe that all our theories and approaches to linguistics are going to be tested and suffer modification. Maybe, when we know enough about discourse

structure in various languages of the world, all the present theories will be replaced by a still more adequate one which will become the framework of the future. In that more adequate theory bits and pieces of our present approaches may survive, but find their proper place in the larger structure of the whole.

FOOTNOTES

¹ Another approach which made syntax feasible for the rank and file of linguists but which found acceptance only with a minority of linguists was tagmemics as developed by Pike and his colleagues. As one who participated in the latter foment I recall vividly how suddenly one summer all of us were trying our hand at syntax while the summer before syntactic analysis had not been a live option. Pike's development of tagmemics came to crest in the late 1950's and was like Chomsky's, symptomatic of a profound dissatisfaction with U.S. structuralism as dominant in that and the preceding decade.

² In English, the reintroduction of a noun which is not needed for disambiguation (and hence where a pronoun would do) marks either the onset of a new paragraph or some important seam within the paragraph. The latter is often a climactic or summary sentence in the development of a paragraph. It is not uncommon for a noun, when thematic in a paragraph, to be mentioned in the first and the last sentences, thus providing a bracketing feature (or inclusio).

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I acknowledge gratefully the permission granted to quote from *The Final Diagnosis* (p. 31) by Arthur Hailey. Copyright ©1959 by Arthur Hailey. Used by permission of Doubleday and Co., Inc. I also acknowledge similar permission to quote from *La Fuerza de la Sangre* by Miguel de Cervantes in *Great Spanish Stories* (pp. 64-66) edited by Angel Flores. Hardback edition, 1956, The Modern Library. Paperback edition, 1960, Bantam Book. Currently out of print but to be reissued in 1979 by Gordian Press, New York. Copyright © Angel Flores. I am grateful again to Charles Scribner's Sons for the right to quote once more from Hemingway's *The Short Happy Life of Francis Macomber* in the third edition of *Studies in the Short Story* (1968) (pp. 126-127) edited by Adrian H. Jaffe and Vergil Scott.

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IS CONVERSATION STRUCTURED?:
TOWARDS AN ANALYSIS OF INFORMAL SPOKEN DISCOURSE

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Conversation has been an object of inquiry for a range of disciplines including linguistics, philosophy of language and ethnomethodology. Each discipline has been motivated by different concerns. The ethnomethodologists, for example, are concerned with the social knowledge underlying our use of language and how we evidence in our language our practical reasoning and common-sense knowledge of society and how society works. Philosophers of language have been motivated to identify particular speech acts and specify the conditions under which they are felicitous. Recent work on speech acts has been more linguistically biased where the aim has been to examine how a particular speech act such as a directive can be realized by a wide range of grammatical forms (Cole and Morgan 1975). Each approach has revealed much about the nature of conversation. Yet there are also certain reservations. The ethnomethodologists deal only with those parts of the text which they find interesting and revealing for their own purposes. In addition, they set out to avoid premature formalisation, but this means that their descriptive categories cannot be explicitly defined for use by other researchers. Work on speech acts is mainly intuitive and not data-based. Furthermore, it deals mainly with isolated speech acts and is unable to deal with the interactional location of the act (Turner 1974).

Two recent models of discourse have sought to meet these problems by providing a comprehensive system of analysis capable of handling a total text as well as providing an explicit and rigorous means for doing so. Sinclair and Coulthard (1975) provide a model capable of analysing the whole of teacher-pupil interaction in formal classroom settings. They seek to investigate how successive utterances are related, how linguistic form relates to discourse function, how speaker roles are distributed and topics are introduced and organised. Labov and Fanshel (1977), using data from a psychotherapy interview, have similar aims. They also make extensive reference to the wider social context in the explication of their text. In both cases the models are expected to be generalisable to other forms of discourse. Much work has already been done on the applications of the Sinclair and Coulthard model to other forms of discourse, although in some cases this has not been entirely successful and various modifications have been suggested (Burton 1977; McTear 1977). The present paper looks at some of these problems and offers some possible solutions.

It seems that one immediate problem stems from the decision to begin with a simple type of discourse which has a more overt structure before proceeding to informal conversation which seemed to be much more loosely organized and controlled. Thus classroom discourse was studied as one participant, the teacher, has control over the selection of topics and organization of the discourse. A fairly clear pattern emerged which showed that discourse seemed to be divisible into three part exchanges in which the teacher initiates by eliciting a verbal response, the pupil replies and the teacher reacts to the reply by accepting, rejecting, evaluating it etc. Thus the typical exchange structure is IRF, (Initiation-Response-Feedback). Other forms of discourse had different exchange structures. For example, interviews had four part exchanges consisting of obligatory initiations and responses preceded optionally by preparatory moves (Pearce 1973), while committee meetings had two part exchanges consisting of initiations and feedback which served to support the presuppositions of the initiation (Stubbs 1973).

In less marked forms of discourse, however, such as informal conversation, this structure is not so apparent. One immediate problem is that participants in informal conversation can change topics as they wish, refuse to answer questions, reject them on account of their relevance, sidestep them etc. Various additional acts are required to account for the ways in which a speaker can be noncompliant yet provide a response which is related to a preceding initiation. Some of the rules involve reference to the preconditions underlying the performance of the initiation (Labov and Fanshel 1977). Thus it is possible for a participant to respond to a request for action by asserting his inability to carry out the action, thus refusing to realize its intended perlocutionary effect while recognizing its illocutionary intent. This involves adding new acts to the discourse acts proposed for classroom discourse and possibly ignoring some acts which are relevant only for the classroom. As such, this is a fairly trivial problem.

A more substantive problem arises, however, when we examine discourse structure, that is, how different discourse acts are organized into larger units. Sinclair and Coulthard propose a rank-scale model in which each unit is structured in terms of lower units. Higher units consist of combinations of lower units. For present purposes, the relevant unit is the exchange, which consists of moves, which in turn consist of acts. Moves can be either initiating or responding. An initiation is a first-pair part. It is "prospective", that is, it sets up expectations about what will constitute an appropriate response. Responses are second-pair parts, they are "retrospective" in that they refer back to the preceding initiation by providing a response from the options made possible by the form of the initiation.

This classification relies on our ability to code speaker moves as either initiations and responses and then to group these together into exchanges (including feedback moves in, for example, classroom discourse). Yet if we examine transcripts of informal discourse, we find that it is often not possible to decide which utterances are initiating and which are responding. In other words, it is not possible to draw the lines marking off one exchange from another. This is not to say that exchanges cannot be recognized in informal discourse. The following example shows two exchanges consisting each of initiations and responses, where the initiations are requests for a verbal response:-

1. Heather: are you gonna make that into a wee lady?
(I - elicitation)
- Siobhan: no (R - reply)
- Heather: what are you gonna make them into?
(I - elicitation)
- Siobhan: just gonna make it soft (R - reply)

Here the responses fulfil the expectations of the initiations and each initiation-response pair can be seen to constitute a well-formed exchange.

The following sample is more difficult to divide in this way:-

2. Heather: do you like his big brother? (1)
- Siobhan: no his br- that is his friend and he
lives in a different house see? (2)
- Heather: he lives in the same house (3)
- that wee boy lives in the same house
and the big boy lives in the same
house (4)
- Siobhan: no (5)
- see the one with the sort of curly
hair and black hair well he lives
in a different house (6)
- Heather: he doesn't (7)

Here (1) initiates by eliciting a verbal response (2). Yet (3) is also a response to (2) in that it rejects the proposition that "he lives in a different house". This response is continued with line (4) and is in turn rejected by (5) which is expanded in (6) and is itself in turn rejected in (7). Each speaker utterance relates to the preceding one, but it is not possible to draw the lines clearly to say where each exchange ends as initiations and responses cannot be identified unambiguously as in example 1. One solution which has been proposed is to differentiate between those speaker moves which support the discourse expectations of a preceding initiation and those which do not (Burton 1977). Supporting moves are coded as responses, non-supporting or "challenging" moves are coded as new initiations. I prefer to adopt an alternative approach where speaker moves such as (2) are double-coded as a response to a preceding move (1) and an initiation of a subsequent move (3). This approach enables us to code the

cohesiveness in discourse where it exists as well as capturing our intuitive judgement that we can respond to an utterance and in turn receive a response and so on. Otherwise we find that we code our data as a series of initiations which frequently receive no response but are followed by new initiations. Apart from failing to show that utterances are related sequentially we are also unable to distinguish these from cases where no relation exists between utterances as in young children's "collective monologue" (Piaget 1959), e.g.

3. Timothy: I've got an aeroplane at home
Philip: I've just found one wee piece.

So responses can be simultaneously initiations requiring further responses. In some cases no further response is forthcoming. This would seem to suggest that the double-coding approach examines discourse retrospectively, that is, responses are only coded simultaneously as initiations when they actually receive a response. However, it is also possible to distinguish between those responses which expect a further response and those which do not, although the means for making this distinction have not been fully formalized as yet. Two approaches have been suggested. One involves classifying utterances according to the shared knowledge involved (Labov and Fanshel op. cit: 100-101). Thus there are A-events which are known to participant A but not to B, B-events which are known to B but not to A, AB-events which are known to both A and B, D-events which are known to be disputable etc. Responses are determined by the relation of the proposition being asserted to knowledge shared by participants. So if A asserts an A-event, only a minimal response is required, whereas an assertion by A about a B-event is heard as a request for confirmation and an assertion by A or B about a D-event is heard as a request for an evaluation, i.e. agreement, disagreement etc. The second approach refers to the use of intonation in discourse where selection of high key by a speaker indicates incompleteness and constrains a hearer to respond whereas selection of low key indicates finality and inhibits further response (Brazil 1975, 1978). Thus it would seem that some reference to shared knowledge and the use of intonation would enable us to account for utterances which, being responses themselves, expect further responses, and those which do not.

Let us return to the problem raised above of different types of discourse. It would seem that different speech events give rise to different types of discourse. Discourse patterns typical of teacher-pupil interaction are not necessarily generalisable to other forms. In fact, different patterns can arise in situations where participants and setting do not change but changes in style and discourse structure are related to variables such as key (formal, informal, argumentative, jocular etc), goal of interaction (explicitly defined or not) and type of speech event (e.g. interview, narrative, banter, scandal, chat etc). These changes in style have been examined in detail by Milroy and Milroy (1977) who show how styles can shift from interview style

in which the discourse pattern is Question-Answer where the interviewer controls the topic, to extended interview style where the informant's replies are longer and the interviewer is restricted to indications of assent and interest which often give rise to further extended responses:

4. Informant:and then your mammy would have knew
 where you were, like -
 Interviewer: No worry
 Informant: No worries, 'cos she knew it was safe
 enough.

Informants could move into performed narrative where the informant took over entirely and the interviewer merely acknowledged. Finally, the interviewer could relinquish the interviewing role and become involved in extended conversation, which included gossip, argument, teasing and narrative, where any participant could dominate at any time and was free to change topics and topics themselves were linked only loosely. Each of these styles could be seen to have a typical discourse pattern in terms of privileges of discourse initiation (whether symmetrical or not), length of turn as well as type of exchange structure. Interview style had a clear two part exchange structure - Initiation/elicitation: Response/reply, performed narrative was minimally interactive in that utterances were not primarily initiating within the narrative although minimal signs of interest and attention were required and extended conversation consisted of a series of moves which each related loosely to preceding moves but where no clear distinction could be drawn between initiations and responses. Consider, for example, the following sample of extended conversation which involves banter between B and S:-

5. B: I got this house 'cos they were pulling the
 bungalows down (1)
 S: ah but they didn't move us from out of here
 so they didn't (2)
 we came of our own bat (3)
 B: ah we moved ourselves (4)
 S: squatted we squatted (5)
 B: we did not indeed squat (6)
 S: we did (7)
 we squatted (8)
 B: when you're a squatter you've no rent book (9)
 I've a rent book to show anybody (10)
 I've a rent book (11)
 S: ah you're not a squatter now (12)
 but when you first came here you were a
 squatter (13)
 B: I've a rent book from the very first (14)
 S: when you first came here you were a squatter
 cos I remember I had to climb over the yard
 wall and all (15)
 (boys laugh mockingly)
 B: alright we had to get in that way (16)

- S: squat (17)
 B: we didn't dear (18)
 (laughter and unintelligible speech by S)
 a squatter is someone that doesn't pay rent (19)
 I've my rent book (20)
 uh this is about the third or fourth rent
 book I've got issued to me now (21)

This extract follows from a discussion about how long B's family has been living in their present house. B recalls details about rent books, etc in order to establish a sequence of events. At this stage and following the extract, the discourse structure is that of extended narrative where B takes the main speaking role and the others simply acknowledge, occasionally qualifying as S does in line 2 (formally marked with "ah but"). The shift in speech event occurs at (5) when S initiates with a D-(disputable) event designed to elicit rejects by B in banter. These rejects are further treated by S as D-events requiring further rejects in turn. For example, B rejects (5) with (6), S rejects (6) with (7), B justifies her reject in (6) with (9), S further rejects and qualifies (12-13). Each move responds to a preceding move and is at the same time linked to and initiates a subsequent response. The sequence almost terminates at (16) when B simply acknowledges (15), but S reinitiates the D-event ("squat") in (17) and receives a further reject (18) followed by a justification (19 and 20). By (21) however, S has decided not to continue with the banter and the discourse moves into extended narrative again.

Summarizing, different speech events give rise to different types of discourse structure. In the case of banter, there is no clear Initiation-Response pattern. However, there is continuity between speaker moves and in order to capture this continuity we have to code many of the moves simultaneously as responses and initiations.

The effect of type of speech event on discourse structure is also important when we consider the acquisition of discourse by children. Children have to acquire competence in a variety of speech events and this involves a knowledge of the discourse structure underlying these events. Thus the IRF pattern of classroom interaction is acquired and differentiated from patterns of other speech events. Work on child discourse has shown that children acquire competence at an early age in speech events such as narrating, arguing, instructing etc (Ervin-Tripp and Mitchell-Kernan 1977). It is also interesting to examine a child's discourse repertoire at a given developmental stage and suggest how development takes place. Snow (1977) has made an interesting study of how mothers develop conversation with their babies. Exchanges were mainly two part, initiation and response. At 3 months mothers treated their children's smiles, burps and vocalisations as if they were intentional, communicative acts and responded to them, thus establishing a basic Initiation-Response pattern. They

also attempted to initiate responses from their babies and often took the baby's turn when no response was forthcoming. By seven months babies were initiating with smiles etc and mothers were requiring more "high quality vocalisations" such as babbling as responses. By 12 months, the mothers' responses often consisted of repetitions which acknowledged the baby's initiation as well as an expansion or explanation. By eighteen months mothers' responses often simultaneously initiated a response from the child, producing more open-ended type exchanges, e.g.

- | | |
|---------------------------|---|
| 6. Child: tea | Initiation |
| Mother: no, it's not tea, | |
| it's coffee | Response/Initiation (reject
and comment) |
| Child: coffee | Response |

The mother rejects the child's proposition and further expands with a correction which requires acknowledgment by the child. Generally moves which reject, refuse or expand with a comment can be followed by a further response.

In my own data of child-child speech I have found that in early interactions exchanges were mainly closed, e.g.

- | | |
|-----------------------------|------------|
| 7. (Siobhan 3;3, Aaron 2;7) | |
| Aaron: I put this in there? | Initiation |
| Siobhan: no | Response |
| Aaron: put this in there? | Initiation |
| Siobhan: no | Response |

Often initiations received no response, e.g.

- | | |
|--------------------------------|------------|
| 8. Siobhan: is yours finished? | Initiation |
| do you like playing? | Initiation |

or there was no clear indication that a preceding initiation was being acknowledged in the response:-

- | | |
|-----------------------------|------------|
| 9. Siobhan: mine's finished | Initiation |
| Aaron: I'm finished | Response? |

Patterns such as example 9 were similar to what has been described elsewhere as "collective monologue" where children take turns as in adult dialogue but fail to take account of the other's speech (Piaget op.cit.). In this early data, there was only one instances of a response which could be double-coded and even here its function was to show interest and only required a minimal response:-

- | | |
|------------------------------|-------------------------|
| 10. Aaron: I wanta play Lego | Initiation |
| Siobhan: do you? | Response/
Initiation |
| Aaron: yes | Response |

These patterns arose in play situations where children were either requesting goods and services, negotiating the conduct of their play or rendering accounts of their own activities. Later transcripts revealed a wider range of interactive patterns where

the children refused to comply with directives, rejected the content of initiations and often justified their refusals and rejections with comments, i.e. expansions. These moves, as explained above, can both respond and initiate further responses and so give rise to more extended and open-ended exchanges. (see example 2). In an analysis of a sample of the data, it was found that the percentage of rejects and refusals followed by comments as well as the percentage of other responses followed by comments increased with age:-

Table 1.

<u>Siobhan</u>	<u>3;8</u>	<u>4;3</u>	<u>4;6</u>	<u>4;9</u>	<u>5;1</u>	<u>5;5</u>
ref/rej + comment	36	83	60	56	79	58
other R. + comment	6	15	14	7	14	17

This suggests that children produce discourse in which exchanges are more open-ended but also linked together topically and interactionally as they grow older. From the perspective of speech events, they develop their repertoire from the simple requests and accounts described in the early transcripts to a more adult-like discussion of example 2.

Conclusion

An adequate model of discourse has to be able to account for a complete text. It also has to be able to take account of the different discourse structures which arise in different speech events. The cohesiveness of informal conversation can only be captured when some speaker moves are treated simultaneously as responses and initiations of further responses as clear Initiation-Response sequences only occur under certain specifiable interactional conditions. This approach also enables us to describe the range of discourse patterns acquired by children as well as indicating stages of development.

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REINTERPRETIVE FUNCTIONS OF ANAPHORIC DEMONSTRATIVE
NOUN PHRASES IN EXPOSITORY ENGLISH

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0. Introduction.* For some demonstrative noun phrases in expository English, the anaphoric nature of their relationship to the rest of the text becomes clear when the noun phrase is considered in an isolated sentence:

(1) Most of the industrial demand for these materials is now met from petrochemical sources (Andersen and Wenzel 1961: 5).

An appropriate reaction to such a sentence might be to wonder which materials were in demand. Since this single sentence cannot clarify the meaning of materials, the reader must look elsewhere, in this case to the preceding sentence, to find the specific meaning:

(2) Fermentation processes produce industrial and beverage alcohols, acetone, and acetic acid by biological action on various sugars. Most of the industrial demand for these materials is now met from petrochemical sources (Andersen and Wenzel 1961: 5).

Seen in the slightly greater context of (2), the demonstrative noun phrase becomes understandable: these materials refers to 'alcohols, acetone, and acetic acid'. Because the co-referent of materials occurs earlier in the text, Quirk, Greenbaum, Leech and Svartvik (1972: 700) would consider the noun phrase reference in (2) anaphoric. For Halliday and Hasan (1976), the relationship between these materials and 'alcohols, acetone, and acetic acid' is one of 'co-interpretation' (p. 314): the general noun materials can be interpreted only with reference to an 'earlier or presupposed item'. Using their analysis, then, one could say that the meaning of the anaphoric item is drawn from its co-referent. In some cases of anaphoric co-reference, however, an additional layer of co-interpretation appears to be operating: as the meaning of the anaphoric demonstrative noun phrase is found in the antecedent, the antecedent may itself be reinterpreted by the anaphor. The purpose of this paper is to examine some demonstrative noun phrases which seem to be involved in such reinterpretation and to consider how the tie between anaphor and antecedent allows each unit to affect the reader's perception of the other unit.

1. Co-interpretation, cohesion, and reinterpretation. Before reinterpretation can be considered, an analysis of a sample of expository writing should demonstrate how Halliday and Hasan's notion of co-interpretation applies to an anaphoric demonstrative noun phrase.

1.1. Example of co-interpretation.

(3) We observe that [the earth, sun, and moon] do stay there, however, and interpret the phenomenon as being due to gravitational attraction. This concept permits us to write formulas that describe the present relative positions of these bodies and predict their future positions (Angus 1961: 7).

The underscored phrase in (3) is a demonstrative noun phrase (i.e., a noun phrase whose determiner is a demonstrative adjective). Quirk *et al.* find that, like some other determiners, this and these 'can be used to signal that a noun phrase is referentially equivalent to a previous noun phrase' (p. 702). Recognizing this signalling effect, Halliday and Hasan classify it as reference, one of five kinds of cohesive ties. The use of the reference item this directs the reader to find an antecedent, a preceding noun phrase or other unit referentially equivalent to the demonstrative noun phrase. In (3), the antecedent appears to be 'gravitational attraction'. The connection between 'gravitational attraction' and this concept is not achieved solely by the demonstrative, however, since the general noun concept contributes to the cohesive effect as a form of reiteration: 'A reiterated item may be a repetition, a synonym or a near-synonym, or a general word' (Halliday and Hasan: 278). In Halliday and Hasan's terms there is thus a 'double cohesive tie' (p. 319) between the anaphoric phrase this concept and its antecedent: this creates a reference tie, while concept provides lexical cohesion through reiteration.

But the strong link between the two noun phrases is not simply a curious artifact; for Halliday and Hasan such cohesion is 'a necessary element in the interpretation of text' (p. 300). In order for the reader of (3) to understand exactly what 'permits us to write formulas', he must know which concept the author is referring to. Since concept, like materials in (1), cannot be understood in isolation, the reader must find its antecedent, the phrase to which it is linked by cohesive ties. Only when the general noun is interpreted with reference to the more specific one can concept be decoded; the co-interpretation of the two phrases is thus important in deriving the meaning of the second sentence of (3).

1.2. Cohesion and reinterpretation. According to Halliday and Hasan, however, a general noun such as concept does not have to be a dummy element, simply holding a place for a more specific earlier item. They write that using a general noun for lexical cohesion 'opens up another possibility, that of introducing an

interpersonal element into the meaning' (p. 276). In their framework, the interpersonal component of language expresses the speaker's or writer's attitudes and judgments; this component is distinct from the textual component of which cohesion and, therefore, co-interpretation are a part (p. 26).

Following Halliday and Hasan, then, one could say that in (3), concept indicates the writer's attitude toward 'gravitational attraction': it is not a 'rumor', a 'belief', or a 'myth', but a concept, something the author feels to be coherent, logical, and scientific. That the writer chose to use this particular general noun instead of any other, therefore, says a good deal about what he thinks of 'gravitational attraction', as well as about what he wants his readers to think. When the reader connects concept with its antecedent phrase, the image he has already formed of 'gravitational attraction' may then be altered, in keeping with the writer's attitude as revealed by his use of concept.

With one of the twelve principles of tagmemics, Pike (1964) suggests a way in which such an attitudinal change could take place. Because language is social behavior 'with impact or change carried over a bridge of shared components' (p. 193), Pike finds that part of the impact or meaning of a text depends on 'pivot elements' shared by different parts of the text. As shown above, in (3) it is the double cohesive tie, an element shared by the demonstrative noun phrase and its antecedent, that permits the full interpretation of the general noun. Without the bridge of cohesion, the co-interpretation of concept would be difficult. But most bridges allow traffic in two directions, and the bridge of the double cohesive tie in (3) is no exception. The connection between anaphor and antecedent provides a new perspective on the antecedent: the special semantic features of concept are now also applied to 'gravitational attraction'. As the bridge of shared elements allows the specific noun to show the reader the meaning of the general noun, so does it allow the general noun to reach back and affect the reader's perception of the earlier-mentioned specific noun. The earlier item is, in effect, reinterpreted by the anaphoric reference.

Where this view of reinterpretation departs from Halliday and Hasan's notion of the interpersonal component is in its reliance on cohesion as the vehicle for change. For Halliday and Hasan, the communication of the writer's attitude appears to operate independently of the textual or cohesive component of language. But reinterpretation, which to be sure is only one way of communicating attitude, depends heavily on the cohesive relation between anaphor and antecedent. It is the other side of co-interpretation, the other lane on the bridge of the shared cohesive ties.

2. Some functions of reinterpretation. In expository English, reinterpretation appears to fill several rhetorical functions, including definition, classification, and clarification of role. To demonstrate the way in which an anaphoric reference can bring

about such reinterpretation, for each of the examples presented in this section I will describe the 'bridge of shared components' allowing reinterpretation as well as the possible change in the reader's perception of the antecedent and the rhetorical function such a change may involve.

2.1. Definition. An anaphoric demonstrative noun phrase may provide a name for its antecedent, as in example (4):

(4) Market research, the first step in new product sales, begins long before the new process is in operation. It answers the fundamental question "Will it sell?" If the proposed product is completely new, market research contacts potential users to determine their needs and thereby establish whether a market exists. If management decides to continue the project on the basis of this preliminary market survey, the pilot plant may produce sufficient product to supply samples to potential customers so that they may test the product for their applications (Andersen and Wenzel 1961: 43).

The co-referent of the underscored demonstrative noun phrase is the main clause of the preceding sentence: 'market research contacts potential users to determine their needs and thereby establish whether a market exists.' As in (3), two cohesive ties establish a bridge of elements common to the noun phrase and the clause: first, the use of this provides a reference tie indicating that the noun phrase is cohesively related to an earlier element; second, the repetition of market in the anaphor and in the antecedent, and the use of the similar terms survey, research and contacts¹ establish lexical cohesion between the noun phrase and the earlier clause. Such a connection allows each item to affect the reader's image of the other item. Through co-interpretation, the antecedent clause defines the term 'preliminary market survey'. Conversely, linking the anaphoric noun phrase to the clause gives a label to the process described by the proposition, thereby objectifying it and making it perhaps more important for the student reader.

The definition in (4) is an example of what Selinker, Todd-Trimble and Trimble (1976) have called 'implicit definition'. According to them, when such information is presented implicitly it does not communicate the main point of the paragraph in which it is found. An implicit definition such as the one in (4) therefore should claim marginal rather than nuclear attention from the reader. Using an anaphoric reference to label an element occurring earlier appears to be one way of defining that item without assigning too much prominence within the paragraph to the definition.²

2.2. Classification. The anaphoric phrase may also supply a name for a class in which two or more antecedents are grouped:

(5) The following two sections introduce proven approaches which lead to fewer simultaneous equations than does the direct application of Kirchhoff's laws. A comparison of these techniques is given in Section 5-7 (Angus 1961: 120).

The underscored demonstrative noun phrase has two antecedent phrases: 'proven approaches' and 'direct application of Kirchhoff's laws'. Once again a double cohesive tie is found between anaphor and antecedent. A reference tie, established by the use of these, leads the reader to search for an earlier mention of something plural. The occurrence of techniques, a near synonym for 'approaches' and 'application', provides lexical cohesion between the three terms, binding the two earlier nouns in the more general class of 'techniques'. Interpreting the demonstrative noun phrase with reference to the antecedents tells the reader which techniques will be considered later, while reinterpreting 'approaches' and 'application' as 'techniques' gives the reader a new perspective on their value. As the tools of technology, 'techniques' may be used for an applied scientific purpose. 'Approaches' and 'application', on the other hand, may be used in almost any field of endeavor, and do not carry the solid scientific ring one hears in the word 'techniques'. Connecting the demonstrative noun phrase with its antecedents shows that, in this environment, the writer groups 'approaches' and 'application' together in a class of scientifically useful things. When the reader recognizes such a classification, the procedures mentioned earlier may well achieve somewhat greater importance for him.

Nonetheless, the classification described above is certainly not the main point of the paragraph shown in (5). Found in a paragraph whose purpose is to describe the next sections of a textbook, the classification is, in the word used by Selinker, Todd-Trimble, and Trimble (1976: 285), 'buried'; it is communicated implicitly. Anaphoric reference appears to be useful in such implicit classification, as it is in implicit definition. If the writer does not wish to emphasize the classification in the structure of the paragraph, he may use an anaphoric noun phrase to associate earlier-mentioned items in a new class. The association can then be established quietly rather than by a direct, obvious listing of each member of the class.

2.3. Clarification of role. Understanding the function or role of each sentence in a particular paragraph can sometimes depend on fully interpreting an anaphoric demonstrative noun phrase, as in (6):

(6) A magnetic supply eliminates most or all of the vacuum tubes; the regulating action is performed by means of a magnetic amplifier in one form or another. Such devices, while relatively inexpensive, readily reflect input-circuit voltage changes through the

supply to the electrical load and are frequently frequency-sensitive. In a large number of well thought-out applications, these limitations are not disadvantages, especially when commercial power lines are available (Angus 1961: 85).

Since limitations has for its determiner the reference item this, one may expect the noun to be involved in lexical cohesion with an earlier element of the text. Finding its antecedent depends not only on semantic or lexical relations, however, but also on the grammatical tie of number agreement. Since the noun appears in its plural form, the reader is directed to look for the mention of more than one limiting or less-than-desirable characteristic. While the second sentence of (6) describes two qualities of 'devices', neither one seems particularly undesirable at first glance. Any lexical relation, therefore, appears weak until the grammatical connection between the plural noun and the coordinate verb phrase is recognized. Based on the agreement between more than one item and more than one proposition, the lexical cohesion becomes clear: reflecting voltage changes and being frequency-sensitive are limitations. The reference tie, the grammatical link, and the lexical cohesion, then, all create a bridge between the underscored phrase of (6) and the coordinate verb phrase of the preceding sentence.

Connecting anaphor to antecedent once again affects both: the reader learns which qualities 'are not disadvantages', but he also learns that those characteristics are not especially good. To the observer unfamiliar with electrical engineering, nothing in the second sentence itself indicates that its purpose is to describe limiting qualities.³ Without understanding the purpose or role of that sentence in the paragraph, the uninitiated reader may completely misunderstand the sentence itself. But the anaphoric reference in the following sentence points him back for a second look. When he finds the antecedent and understands the purpose of the second sentence, the meaning he had already posited for that sentence may change a good deal.

As one of the four cells in a tagmeme on the grammatical hierarchy, role occupies an important position in tagmemic theory. Pike and Pike (1977) define the feature of role as the 'function [of a unit] in the construction sequence' (p. 12). In (6) the function of the second sentence in the paragraph is unclear until that sentence is connected with the anaphoric demonstrative noun phrase of the third sentence. In tagmemic terms, then, one might say that the role of the second sentence on the paragraph level of the grammatical hierarchy is established and clarified by the use of the demonstrative noun phrase in the following sentence. The anaphoric phrase thus reaches back, across the bridge of shared components, to affect the reader's perception of the function of an earlier textual element, filling in his previously incomplete understanding.⁴

3. Conclusion.

3.1. Summary. Placing some demonstrative noun phrases in isolation quickly reveals their anaphoric nature; they cannot be understood without reference to antecedents. Cohesion between the noun phrase and its presupposed item allows the two textual elements to be interpreted together, each one affecting the reader's image of the other. The reinterpretive effect of the anaphor on the antecedent may serve a rhetorical function of clarifying a role, or defining, or of classifying.⁵ To derive the full meaning of a text, the reader therefore needs to consider the anaphor and antecedent together, in order to understand the change each element brings about in the other and the function which that change may have in the text.

3.2. Language as social behavior. Such an analysis of the anaphoric effects of certain demonstrative noun phrases in expository English depends heavily on a conception of language as social behavior. For Pike meaning does not exist in isolation: 'The understanding of a language involves the observer-linking of a linguistic form to an experienced meaning' (1964: 193). In reinterpretation it is not some abstract item that is changed; rather, it is the reader's perception of a section of the text that is altered by its relation to another section. The interaction of various parts of the text evokes a second aspect of the social nature of language: the text is itself a society, an ecology, with each element inevitably affecting each other element. In literature, an ecology where relationships are continually readjusted to admit the new, T.S. Eliot does not 'find it preposterous that the past should be altered by the present as much as the present is directed by the past' (1920: 45). If discourse is also considered in such an ecological, social light, perhaps it will not seem preposterous that a later unit should alter an earlier one, reaching across a bridge of the shared component of cohesion.

Notes

* I am grateful to Professors Ann Borkin and Larry Selinker for having read and commented upon earlier papers dealing with various aspects of anaphoric demonstrative noun phrases. In preparing the current paper I have benefitted greatly from discussions with Professor A.L. Becker and Stephen Tyma. I am particularly indebted to Professor K.L. Pike; it was during a course he offered on discourse analysis that I first became interested in anaphora, and his encouragement since that time has been most appreciated.

¹ These three terms are frequently collocated: for some members of the academic community, research begins with a survey

which can only be carried out by contacting subjects.

² In addition to Selinker, Todd-Trimble and Trimble, several others have studied the rhetorical function of definition; the reader may wish to consider Lander 1977, Lackstrom, Selinker and Trimble 1973, and Trimble 1976.

³ The experienced electrical engineer, on the other hand, might immediately recognize the unfavorable nature of the characteristics described.

⁴ For a slightly more technical tagmemic description of role anaphora, see Tyma 1977.

⁵ I do not wish to suggest here that only anaphoric demonstrative noun phrases may fulfill these three functions, or that only these functions are associated with such noun phrases. The list of functions is intended to be neither exhaustive nor exclusive.

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SUBJECT DELETION IN ENGLISH
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Both prescriptive and descriptive grammars agree that the subject phrase is an obligatory constituent of English sentences. Yet when we listen to real people talk, we often hear subjectless sentences. Imperatives are accounted for by the rules, but deleted subjects in non-imperative sentences are not.

Why is it that "you" can be deleted in the imperative? There is no grammatical marker to indicate the person and number of the subject or even to indicate the imperative. The uninflected infinitive form used for the imperative appears as the present tense form for all plural subjects in every verb except "be." In fact it is context and intonation which mark an imperative. The sentences below differ only in the way in which they are said:

1. You, do your homework (right now).
2. You do your homework (yet)?
3. You do your homework (everyday).

In ordinary conversation the same three-way identity of form is possible without a subject. The first is the traditional imperative.

4. "Do your homework or there will be no dessert."

The sentence can serve as the first or only utterance of an exchange between speaker and hearer. Consequently, since there are two participants, the second party, who is not speaking, becomes the logical choice for the subject of the command.

In the second example, the speaker is asking a question.

5. "Hey, Jack, do the dishes yet?"

Since there is no mention of a third party, the person being addressed must be the subject of the sentence. The only other choice would be the speaker himself, eliminating the major purpose of questions. Part of the explanation for the lack of ambiguity in isolated sentences such as 4 and 5 is that one is a command and the other, a question. Each must be directed to a specific hearer or hearers. When that hearer and the

grammatical subject are identical, deletion is possible without ambiguity.

An indicative sentence such as 3, which makes a statement or assertion, has a wider range of possible subjects. Consequently, a subjectless version of sentence 3 requires more context in order to convey the intended meaning.

6. "You are impossible to deal with. Never do your homework. Stay out till all hours. Disobey your father. I can't do a thing with you."

In this example it is significant that deletion does not occur in the initial sentence of the sequence. Identification of the subject is necessary in that first sentence to allow for subject deletion. If the subject of that first sentence were "they," the deleted subjects would also be "they," not "you." An example of a comparable sequence with deleted "they" is found in 7.

7. "They are impossible to deal with. Never do the dishes. Clutter up the house. Fight all the time. I can't do a thing with them."

Since "they" is established as the topic of the sequence in the first sentence, it becomes the most likely deep subject for the sentences which follow it. Within the context of that initial sentence, there is no ambiguity or possibility of misunderstanding.

For most subject deletion to take place, the recoverable subject must be clearly indicated by the context of physical circumstances or of previous utterances. In a study of ellipsis, Richard Gunter has drawn a similar distinction between what he calls telegraphic and contextual ellipsis. He defines telegraphic ellipsis as depending on "hints about [the] proper expansion being supplied by the real surrounding situation." (1974:11) On the other hand contextual ellipsis depends "directly upon some foregoing sentence or sentences for ... expansion." (1974:14) "You" deletion in commands and in questions is an example of physical circumstances (or telegraphic ellipsis) at work to identify the deleted subject. However, this approach to the question of subject deletion is an inductive one leading to what should be possible. Examination of a wide range of English data collected from a variety of sources indicates that actual occurrence of these subjectless sentences is, in fact, rather widespread.

The most obvious example of subject deletion made possible through physical circumstances is the deletion of first person subjects in diaries and journals. The practice of keeping a

journal was very common in the nineteenth century. A number of these journals are available in published form today, especially those of literary figures and their circles. Even a cursory examination of these journals reveals the frequency of first person "I" subject deletion.

8. "June, [1861] Read a good deal; grubbed in my garden, and made the old house pretty for May. Enjoyed Carlyle's French revolution very much."
(Louisa M. Alcott 1899:128)
9. "14 February 1838. Went to Cambridge to hear Mr. E., who is to repeat his lectures there. Heard the lecture on the "doctrine of the hands,"....
(Convers Francis 1978:26)
10. "November 18 [1843] Felt as lazy all the morning as was naturally to be expected in such a state of weather; took tea in Murray Street and went with Templeton to the First Philharmonic.
(George Templeton Strong 1952:215)

Journals and diaries are somewhat unusual data because of the speaker/hearer relationships. The speaker (or writer) and the hearer (or reader) are the same. Consequently, the possible subjects are limited. If the context does not provide the option of a third party, the subject must be the combined speaker-hearer.

Another physical context which is compatible with first person subject deletion is private personal correspondence. In letters the speaker/writer is clearly identified, so assertions are attributed to the first person unless there is contextual evidence to the contrary. Although subject deletion is less frequent in letters than in journals, examples abound.

11. Dear Marmee--Had a very transcendental day yesterday, and at night my head was "swelling visibly" with the ideas cast into it..... (Louisa May Alcott 1899:268)
12. Dearest Scottina:

Glad you got a break in the New York papers. Bet you were thrilled. Notice you got the [?] picture into the background to show you were a glamour girl at heart. ...
(F. Scott Fitzgerald 1965:116)
13. Thought very little of Swanson offer. Haven't touched a novel for four months, save for one week.
(F. Scott Fitzgerald 1977:172)

14. Yes; the garden is the only life preserver left. I pity those who haven't it. I have been spending Sunday with the Lays -- am just returning to Paris.
(Edith Wharton 1965:291)

What is interesting about subject deletion in letters is that its occurrence is constrained even within the context of correspondence. The fragments in 11 and 12 are taken from letters between parents and children--F. Scott Fitzgerald to his daughter and Louisa May Alcott to her mother. The other two examples are postscripts added to more formal letters. Thus for subject deletion to occur in letters, the exchange must be informal and more than likely addressed to someone who is very close to the writer. These two constraints are equally applicable to journals and diaries. The entries are informal. Since the writer and reader of the journal are presumed to be the same person, the relationship is certainly a close one. Although some nineteenth-century writers shared their journals with their friends, such sharing was considered a mark of closeness.

Deletion of third person and plural subjects is a more complicated phenomenon. Previous sentences are necessary to make clear the identity of the subject. As a result, sentences with deleted third person subjects do not occur in isolation or as an initial utterance. The exception is newspaper headlines.

Newspaper headlines without subjects are interesting because there is no physical context to insure a common presupposition about the identity of the underlying subject. Occasionally, the headline itself will contain enough context to assist the reader. The subject of the embedded sentence in 15 can be recovered from the main sentence.

15. SOUTHERN BELL SAYS MUST HAVE INCREASE

Otherwise the context which enables the reader to identify the subject follows the subjectless utterance. Therefore the reader must form a hypothesis and read further to have it confirmed or denied.

In some instances the underlying subject is apparently thought to be prominent in the public consciousness as in 16, or a nebulous cover term such as "the government" can be employed until the subject is more closely identified as in 17, 18, and 19.

16. WINS REVERSE BIAS CASE

WASHINGTON--The Supreme Court ruled Wednesday

that the University of California at Davis must admit Allan Bakke to its medical school because its admissions program illegally discriminated against whites.

17. HALTS RENTING IN BROOKLYN PROJECT

A federal judge has ordered a temporary halt to renting apartments in the newly opened Roberto Clemente Plaza Houses in the Williamsburg section of Brooklyn.

18. ACCUSE MARSHAL OF INFLATING FEES

Investigation Commissioner Nicholas Scoppetta filed charges yesterday against a city marshal for alleged fee hiking, overbilling, and faulty record keeping.

19. SEES UNNEEDED HEALTH-CARE BEDS

The state's failure to identify long-term health-care needs may "be contributing to the development of unneeded facilities which do not have the potential to fill their beds with the appropriate patients," Controller Arthur Levitt's office concluded yesterday.

Of course, headlines are subject to the further physical constraint that they must fit a given space with a certain number of units. In some instances such as 20 which appeared as filler, space seems to be the primary consideration.

20. INTRODUCED TO EUROPE

Iron was introduced into Europe from Asia Minor about 1,000 B.C.

Subject deletion or merger with an auxiliary verb is a phenomenon which characterizes connected casual conversation. I have already pointed out and explained the susceptibility of commands and questions to second person subject deletion in conversational English. Third person subjects too are deleted if a context exists to clear up the possible ambiguity.

To find examples of such utterances, I examined the transcript of a 33-minute tape recorded for conversational analysis. In that 33-minute period there are some 20 instances of clear third person subject deletion. In a few cases the identity of the subject is ambiguous, but visual cues unavailable to us may have clarified the sentences for the participants. Sentences 21, 22, and 23 show how the deletion operates.

21. "En boy when Keeg'n come around he come right up into im tried tuh put im intuh th'wa:ll."
22. A: "So, boy when Keeg'n come in he-... screamed iz damn engine yihknow,"
- B: "Settin there en'e takes iz helmet off'n clunk it goes on top a' car..."
23. "Al's a pretty damn good driver. 'S been around fer a Ti'll while."

Recovering the deleted subject does not differ substantially from tracing the chain of reference for anaphoric pronouns. Thus the conditions necessary for subject deletion to occur are much like those which apply to pronouns, and determining the underlying subject only rarely presents difficulty for the native speaker of English. (A fact also noted by Richard Gunter in his discussion of contextual ellipsis.)

In addition to the instances of third person subject deletion in the 33-minute tape, there are 15 examples of first and second person subject deletions (exclusive of imperatives). Most of them depend upon social dynamics for recovery of the deleted subject, as in 24 and 25.

24. "Think McGilton lost a crank las night in his engine."
25. "Break the whole insides out if you keep wobblin' that barrel around."

In 24 the deleted subject is the speaker who is expressing an opinion. Both the subject and a modal auxiliary are deleted in 25. Intonation as well as reference to the subject of the following clause insure proper identification of the deleted subject as "you."

Merger between pronoun subjects and verbs, especially auxiliary verbs, is a common phenomenon because the pronouns and auxiliaries are not stressed. Consequently, utterances like 26 with a vowel from the pronoun and a consonant from the verb combined are not unusual. Often the result is more like 27, an inarticulate "uh" which introduces the sentence.

26. "But eez taking it t'Florida."
27. A: "What's the most embarassing thing that's ever happened to you?"
- B: "mm [pause] uh can't think of anything, y'know."

Conversations such as those cited above share a common feature with the journal diaries and letters mentioned earlier. They too are examples of casual, informal exchanges. Subject deletion or merger is rarely found in formal, deliberate speech.

In the preceding discussion the deleted subjects have all been personal. Impersonal subjects, such as "there" and "it," are also susceptible to deletion.

28. "Ain't no sense'n bein dumb if you can't show it once 'nawhile."

29. "Looked like you'd--y'know shave off the ...fender."

Ernest Hemingway used sentences such as 30 in his short story, "My Old Man," to help establish the character of his adolescent narrator.

30. "Seems like in Milan everybody is going somewhere."
(Hemingway 1953:195)

Deletion of such impersonal subjects adds to the informal atmosphere of a young boy talking about his father.

In most instances of subject deletion, a condition prohibiting the creation of ambiguity is in operation. Subject deletion is limited to the situations mentioned here because these situations provide the information needed to disambiguate the sentences. Sentence 31 is not acceptable in isolation because there is not obvious subject to be recovered.

31. *Write letters every night.

We can not determine the subject, and consequently, the sentence fails to convey its intended meaning.

One of the perversities of human nature is that such ambiguity is occasionally the purpose of a speaker. For example, a frequent goal of ambiguity is to conceal the gender of an unnamed person.

32. "This weekend? I had dinner with a friend, what a cook! Made a salmon mousse and a Caesar salad. Then showed me how to brew coffee. 'S hoping to go to grad school next year; wants to be a linguist."

Is this friend male or female? It could be either. The speaker has been careful never to use a pronoun. Deceit is not the only motivation for purposeful ambiguity. I recently checked in at the airline desk for a friend. To simplify matters, I did not explain that the ticket was not mine when I chose a seat for my friend. The agent commented on the reservation, which had

been changed, and I replied,

33. "Couldn't quite face that storm last night."

The social dynamics would naturally lead him to believe that the deleted subject was first person, "I." In fact the underlying subject was my friend. I assumed her identify without actually laying claim to it.

In summary, subject deletion provides another example of the need for descriptive grammars to extend their focus beyond single sentences to contextual and social factors. This study has pointed out two basic types of subject deletion:

- A: Deleted subjects indicated by social dynamics of the physical situation, primarily first and second person singular subjects.
- B: Deleted subjects indicated by the context provided in surrounding sentences, primarily third person singular and plural subjects.

Both involve optional rules which can operate only within certain constraints. For the most part deletion is not allowed if it creates ambiguity. It occurs in casual, informal language. Evidence from letters suggests that another important factor may be the closeness or familiarity of the participants.

Third person and plural subject deletions are constrained by the position of the sentences in a sequence. The subjectless sentence can not occur in isolation or as the first sentence of an utterance if the deleted subject is third person or plural. Deletion of subjects in subsequent sentences is dependent upon a clear chain of reference.

First and second person subjects are more easily recovered. If the subjectless sentence is a command or a question, the subject will be "you." If the sentence is an assertion, the deleted subject will likely be "I." Certain verbs, such as "guess," "hope," "wish," "bet," seem more conducive to first person subject deletion than other verbs. It even appears that present continuous tense and past tense are the most common verb tenses used in subjectless sentences. Present continuous might be expected since its auxiliaries provide maximum differentiation of agreement forms and the deleted subjects can often be determined by the verb inflection. However, the past tense ending never varies. Moreover, in the present continuous, the auxiliary is often lost with the subject. Thus we do not depend on grammatical morphemes to find the underlying subject.

This study is only preliminary in many respects. I have

outlined two types of subject deletion and suggested certain conditions on their operation. These need further investigation and quantification. Such information about subject deletion is not explained in terms of regional or social dialect. Furthermore, possible universal implications have been completely ignored in this paper. Because of the prevalence of the phenomenon in other languages, study of the universal characteristics of subject deletion would also be a significant contribution to our understanding of language and how it is used.

Notes

¹I thank Charles and Marjorie Goodwin for bringing this body of data to my attention.

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INTONATION AND EXPECTATION¹

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Psychologists have long been baffled by the problem of comprehension. How is it that listeners are able to, with apparent lack of effort, comprehend long stretches of linguistic input virtually simultaneously with the speaker's output? The problem has generally been divided in two: the first aspect being that of speech perception or the decoding of the acoustic signal into linguistic form and the second aspect requiring the actual interpretation of the decoded input and presumably involves such things as lexical look-up and syntactic parsing. It is becoming increasingly apparent that these two aspects of comprehension cannot be separated; the process of interpretation does not require that the acoustic analysis of the input be complete before it can begin, in fact the acoustic signal is often interpreted in light of prior information obtained from linguistic analysis of what has been said. Listeners use contextual constraints to formulate expectancies about the kinds of things that might be said next. These constraints are based both on the listener's knowledge of the language, and on his/her knowledge of the world in general and of the specific situation, in particular.

Another influence on psychologists' attempts to study comprehension comes from the area of discourse analysis. Researchers are becoming increasingly aware that the word, and even the sentence, is not an appropriate unit of analysis when trying to understand the comprehension of speech. Listeners make use of the larger context of discourse when trying to comprehend a particular utterance at any given point in time. Additionally, while words and utterances must necessarily be produced in temporal order, processing is not necessarily complete when a word or utterance is no longer present. As Tyma (1978) points out, what has been said can be reinterpreted in light of what is being said, just as what is being said is placed in the context of what has been said. Human beings, as language users, do not statically decode input; they bring to bear all their linguistic and world knowledge to the specific situation. Comprehension must be a dynamic process, with listeners constantly having to refer to the prior discourse on the one hand, and forming hypotheses about the possible content of the next utterance, on the other,

The body of my paper is concerned with a problem which combines all the factors mentioned above and is an illustration that there are a large number of components which give rise to the comprehension of an utterance. The problem I am concerned with,

intonation, is unique to spoken language. In this paper I shall restrict my discussion to English intonation and the use that native English speakers make of it in conversation, though I am convinced that languages with other intonation systems have equivalent but different ways of performing the same functions that I will discuss. Throughout this paper it should be kept in mind that I am concerned with the communicative function of language and thus with the cognitive processes involved in speaking and understanding. It is my basic assumption that speakers structure what they say so as to reduce the uncertainty involved in decoding the "meaning" of what was said, and further, that listeners use their knowledge of the world as well as their knowledge of the language in order to understand the message. This structuring, and the subsequent decoding of it, are psychological processes but are constrained by the options permissible in the language, in this case English.

My concern with intonation is not with the global use of different contours, for example whether an utterance is a declarative or an interrogative, but instead is with the local use of accent or sentence focus. Here accent is defined as the co-occurrence of changes in pitch, intensity and duration (or any combination of these), that mark the accented word as intonationally prominent. It is my contention that accent is a feature of the discourse as a whole, not just of the individual utterance, which is a view that I share with Gunter (1966), among others. Gunter suggests that there exists a neutral form for each utterance, consisting of a "normal" constituent order and said with falling accent on the last nominal. This form of an utterance, he suggests, is unique in that it presupposes no particular context. The same utterance, however, can be said with varying placements of accent, each of which presupposes a different preceding context. A particular accent (or stress pattern, I shall use the terms interchangeably) points back to its context and thus ties it anaphorically to the rest of the discourse. Schmerling (1976) goes a step further and suggests that what is often referred to as "normal" intonation and as "neutral" intonation by Gunter, does not really exist in discourse but is a citation form. She suggests that the widespread discussion of the properties of normal intonation came about through the mistake of studying sentences in isolation. My own informal analysis of taped conversations showed that the "normal" intonation pattern occurred less than a third of the time, which is not surprising if one assumes that accent is a property of discourse and not of sentences.

Bolinger (1972) seems to go beyond the claim that accent is a discourse property and suggests that it reflects what the speaker feels is important in the sentence. Bolinger argues that accent is determined semantically and indicates semantic focus. If it were possible to know exactly what the speaker felt was the "point" of the utterance, then it would be possible to predict exactly where the accent should fall. This sort of discussion

suggests very strongly that the placement of accent is the result of a cognitive, rather than a linguistic, process. Accent placement varies as a function of the importance of that aspect of the sentence in the speaker's mind; it is not the case that a linguistic rule exists which says that the accent must always fall in a particular place. The fact that there is a choice and that a particular choice was chosen means that it must be psychologically important. Further, we can assume that listeners, also being speakers of the language, can put the operation in reverse; those words which are accented in a speaker's utterances must be the most important. Cutler and Foss (1977) proposed a similar idea about accent and produced evidence to support it. They hypothesized that semantically prominent words should be processed faster by listeners than the other words in a sentence. If accent marks a word as being semantically prominent, then it should be processed faster when stressed in a sentence than it when it is said in the same sentence but without stress. The results of their experiment supported their hypothesis; further this effect held for both content and function words indicating that semantic prominence can probably be added to any type of word.

All the papers mentioned above share the view that the accent points back to its context; given knowledge of what has been said, they argue, it is possible to predict where the accent should fall. While I agree with this proposal, I feel that there is a further and perhaps more important function that sentence level stress, or accent, can perform. None of these authors raise the possibility that sentence accent also points forward and constrains the range of possible utterances that can follow. The accented word, or some aspect of it, can in this view, come to serve as the topic for the next utterance. The accent can thus constrain the content of the next utterance because of its function as semantic focus. Gunter (1966) denies that this could be so: "given a dialogue up to a certain point, we cannot predict anything at all [*his italics*] about the next speech" (p. 34). He reiterates his position in a later paper (Gunter, 1974): "we never know enough about the antecedents to predict anything at all about what the next speech will be--or even whether there will be a next speech" (p. 86). I feel that Gunter is strongly overstating the situation, probably because he is not looking at it from the listener's point of view. It is an obvious, and probably trivial point to say that there may not be a next speech--after all there could be an unexpected earthquake, or more mundanely, one of the participants could suddenly be called from the room. However, the listener probably expects to hear something else said unless there are signs that the speaker's turn is over or the conversation is terminated by recognised cues (for a discussion of turn-taking in conversation the reader is referred to the work of Sacks and Schegloff). Given that listeners are prepared to hear another utterance, unless they have information to the contrary, then accent can play a role in telling them what kinds of things they can expect to hear next. Of course the next

utterance may never be said, but that does not deny the proposal that the listener has formed some ideas about what the topic of that utterance (should it be said) might be, based on the accented word of the utterance that was just said. Once the accented word has been noted as the semantic focus of that utterance, then the listener can "prime" that part of the semantic system which relates to that word, and process the information in the next utterance with greater ease than if the additional information from the accent not been provided. It should also be noted that if the next utterance does not use the accented word, or some aspect of it, as the topic then the listener should be momentarily misled in comprehending that utterance. The two questions of priming and disruption are of great interest to me and are the subject of future research.

In order to investigate my proposal of the bi-directional nature of the links between accent and context, I designed an experiment. The purpose of the experiment is as a demonstration that listeners' intuitions about the function of accent in conversation are much the same as the position stated above--namely that accent both points back to its context, and perhaps more importantly, constrains the content of what can follow. If my position is correct, then listeners on hearing the same sentence with different stress patterns, should alter their choice of possible contexts which precede that utterance, as a function of the variation in stress patterns. Further, if accent serves to mark a word as semantically prominent and limits the range of possible succeeding utterances, then listeners should again vary their choice of succeeding contexts as a function of the change in stress patterns for the same utterance. This experiment is essentially a replication of Newman (1978) which found that contexts did vary as a function of changes in stress patterns, but differs in two respects. The earlier experiment required listeners to produce a context for each utterance, either preceding or succeeding, and only four test sentences were used. The present experiment requires that the listeners chose a context from set of four possibilities and uses 30 test sentences. The pre-selection of contexts allows me to state definitively whether accent variations affect listeners' judgments about the acceptability of different types of contexts that are permissible with different stress patterns as I was able to control the topic and content of each context. If listeners felt no effect of the manipulations of the stress pattern of the test sentence and the topic of the contexts, then their responding should be at chance. Further, the pre-selected contexts led to considerable ease in scoring without the uncertainty involved in trying determine the topics of the contexts that subjects produced in the earlier experiment. The increased number of test sentences allowed me to test the different effects of accent on the choice of preceding (Before) and succeeding (After) contexts; this difference had been noted in the earlier study, but the size of the sample of sentences used had been too small to say much about.

Thirty test sentences, each four words long, were constructed. Each one was said as a declarative sentence, but with the accent falling on each of the four words in turn. A fifth version, which corresponds to a "neutral" intonation pattern where the last word receives the falling accent in the contour, was also used. It is in contrast to the fourth stress pattern, where the last word has a greater degree of emphasis. Even in the cases where words earlier in the sentence were stressed, it should be noted that the sentences still followed the form of declaratives, in that the overall contour fell at the end of the utterance. An example of each of the four stress patterns and the neutral version (N) of one of the test sentences, is given below (underlining = stress):

- A. He hit Bob's arm.
- B. He hit Bob's arm.
- C. He hit Bob's arm.
- D. He hit Bob's arm.
- N. He hit Bob's arm.

Each of the five versions was recorded, using my voice, on a different tape. Each tape contained all 30 sentences but only six examples of each stress pattern--each subject heard all 30 sentences and examples of all stress patterns but only one combination of a given stress pattern and sentence. An independent rater heard the five tapes and indicated the intended stress pattern. The rater's judgments agreed completely with the intended stress pattern.

Two sets of context were made up for the test sentences. Each context in the first set was meant to come before the test sentence in a hypothetical conversation. A separate context was made up for each of the stress patterns (excluding the neutral). Another set of contexts was designed for the after cases; again there was a specific context for each of the stress patterns of the test sentences. The eight contexts (four Befores and four Afters) for the test sentence, He hit Bob's arm, are given below (A,B,C, and D refer to the stress pattern for which the sentence is intended as a context)²:

Befores

- A. Mary and Tom were both angry at Bob.
- B. John made a fist and swung.
- C. Bill wanted to hit Mike but his aim was bad.
- D. Joe tried to throw the ball into Bob's glove.

Afters

- A. No one could believe that he did it.
- B. The blow sent Bob crashing into the wall.
- C. He meant to hit Tom instead.
- D. He was aiming at Bob's head.

No contexts were designed for neutral stress patterns; this version was used as a baseline for measuring the superimposed effects of variations in stress patterns. If the addition of accent does affect sentence comprehension, then a given context should be chosen more often when the stress pattern it was designed to go with is heard, than when the neutral is heard. If it is the case that one of the contexts is somehow "better" than the others, then it should be chosen overwhelmingly when the neutral is heard. The neutral thus serves to measure the amount of response bias present in the experiment.

Two groups of subjects, fifteen in each, were used. The first group was in the Before condition and had to read each of the four possible contexts before hearing the test sentence. They then heard one of the five versions of the test sentence and indicated which of the four contexts would best come before the sentence they heard. The fifteen subjects in the After condition first heard the given stress pattern of the test sentence, then read the four possible After contexts and chose the one they felt would best follow the sentence they heard. In both cases subjects were instructed that the context and test sentence should be assumed to come from the same speaker.

Subjects' choices of correct contexts for each of the stress patterns are shown in Table 1. The results are divided into choices for Before and After conditions. It should be remembered that the chance of choosing the correct context for a given stress pattern is one in four or 25%.

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
BEFORE	.24	.44	.33	.34
AFTER	.47	.52	.45	.48

TABLE 1. Frequency of choosing the (designated) context for a given stress pattern.

In both the Before and After conditions the overall frequencies of choosing the correct contexts were significantly above chance (Before, $Z = 2.32$, $p = .01$; After, $Z = 4.19$, $p = .0001$). However, as can be clearly seen, Before and After differ significantly, $\min F' (1.223) = 4.19$, $p = .05$. Subjects were more accurate at choosing the correct context in the After condition than in the Before condition. It seems that not only is the stress pattern an important determinant of acceptable utterances following the test sentence, but this may be even more important

than its anaphoric function.

The results are even less heartening for Befores when the pattern of responses to neutrals is examined, shown in Table 2. There is no increase in the likelihood of contexts C and D being chosen when the corresponding stress pattern is heard over that shown with the neutral stress pattern. Thus it seems that stress patterns C and D had no effect in the Before condition. We can use the same reasoning to show that what looks like chance responding for stress pattern A in the Before condition is actually an effect; there is a tendency to avoid A contexts with the neutral, the addition of stress boosts the level of responding to what appears to be chance. There is a similar tendency to avoid the A contexts with neutrals in the After condition as well, but the increase shown with the addition of stress is much greater. In all cases for the After condition the stress pattern increases the number of times that context is chosen, well above the neutral case.

<u>BEFORE</u>			
<u>A</u>	.24	<u>N</u>	.07
<u>B</u>	.44	<u>N</u>	.23
<u>C</u>	.33	<u>N</u>	.34
<u>D</u>	.34	<u>N</u>	.36
<u>AFTER</u>			
<u>A</u>	.47	<u>N</u>	.11
<u>B</u>	.52	<u>N</u>	.31
<u>C</u>	.45	<u>N</u>	.32
<u>D</u>	.48	<u>N</u>	.26

TABLE 2. Frequency of choosing the correct context sentence for a given stress pattern vs. choosing the same context for the neutral.

These results present strong evidence that the placement of accent in a sentence affects listeners' expectations as to what can follow. While accent also seems to point back to a context, this is by no means a certainty and definitely not the only, or even primary, contextual use of sentence stress. It is my belief that sentence stress may be one of the few, true, cataphoric devices that exists in discourse. It is worth pointing out that the present experiment was concerned only with the existence of the effect of stress on expectation, and not with the actual processing of the utterances. My current research is concerned with a hypothesis derived from the view presented above, namely that those following contexts which match expectations generated by the placement of accent will be comprehended more rapidly than those which would not be predicted from the stress pattern.

In conclusion, I would like to argue (and the data support my position) that sentence stress has both an anaphoric and a cataphoric function in discourse. The placement of accent is one, of perhaps many, linguistic devices that the speaker uses to reduce the problem of comprehension for the listener by marking that which is semantically prominent. The listener, in turn, uses the information both to tie the utterance to what has been said and to form new ideas about what might be said.

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Footnotes

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² While the contexts used in this experiment are concrete, the reader should not suppose that I think listeners generate these particular contexts when they hear the different versions of the test sentences. Rather, the contexts serve as an illustration of the kinds of utterances that would be permissible either before or after the given version of the test sentence. The contexts must be more related to the stressed word than to any other word in the sentence; clearly a large number of contexts could fit this requirement, and I have only chosen one for each stress pattern. Still, the resulting permissible contexts are far fewer than would be allowed in the neutral case. The point remains--stress does not lead, in my view, to the generation of a specific context for an utterance, but rather predisposes the listener to expect certain kinds of information in the next utterance. That information should be related in some way to the accented word, perhaps by using it as the topic or starting point, because the accent has pointed out that word to the listener as being semantically prominent for the speaker.

DISCOURSE FROM THE PERSPECTIVE OF FOUR STRATA

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0. Introduction

Any body of text material involves multiple kinds of signals and information. It is important to recognize the various kinds of information signalled and in the case of simultaneous but distinct structures to ultimately sort out what aspects of the text are relevant to each structure. The purpose of this paper is to partially illustrate how a four stratal perspective of a text may look and to suggest how data may be organized to sort out and identify the contents of each stratum. These data then form the bases for conclusions drawn about the tactic and realization relationships in and among the various strata. The details of the conclusions are beyond the limited scope of the paper but some suggestions will be made.

Figure 2 outlines a stratified communication model (Fleming 1974) which reflects Sydney Lamb's basic concepts of multiple strata with two kinds of linguistic relationships: tactic and realization. The strata enclosed in straight lines are those which involve different kinds of linguistic elements. Their distinctive combinatorial potentials are defined by the tactic relationships of the stratum to which they pertain. Morphemes are combined in morphotactic constructions such as words, phrases, the clause and possibly the sentence. Sememes are combined in semotactic constructions such as propositions, interpropositions, paragraph, discourse, and conversation block. The strata enclosed in dotted lines reflect four of the expression level strata. Any or several of these strata may be employed at the same time in the coding process. In oral communication both the phonemic and the kinesic strata are employed. In American Sign Language communication both the gestemic and kinesic strata are employed. Only the graphemic stratum is employed for written communication. The strata enclosed in wavy lines are those which have elements that have realization relationships with the linguistic elements. The communication situation and physical phenomena stratal elements are those sometimes referred to as substance or extralinguistic. For encoding, a communicator in the communication situation selects from his perception of the referential realm the content of the message he wishes to encode. (The referential realm may be real or mythical, concrete or abstract, whatever the communicator wishes to talk about.) The encoding of the message will be affected by the intent, interests, and attitudes of the communicator and of the audience, the materials selected from the referential realm, the social setting, the social relationships among the various referents, the culture, and

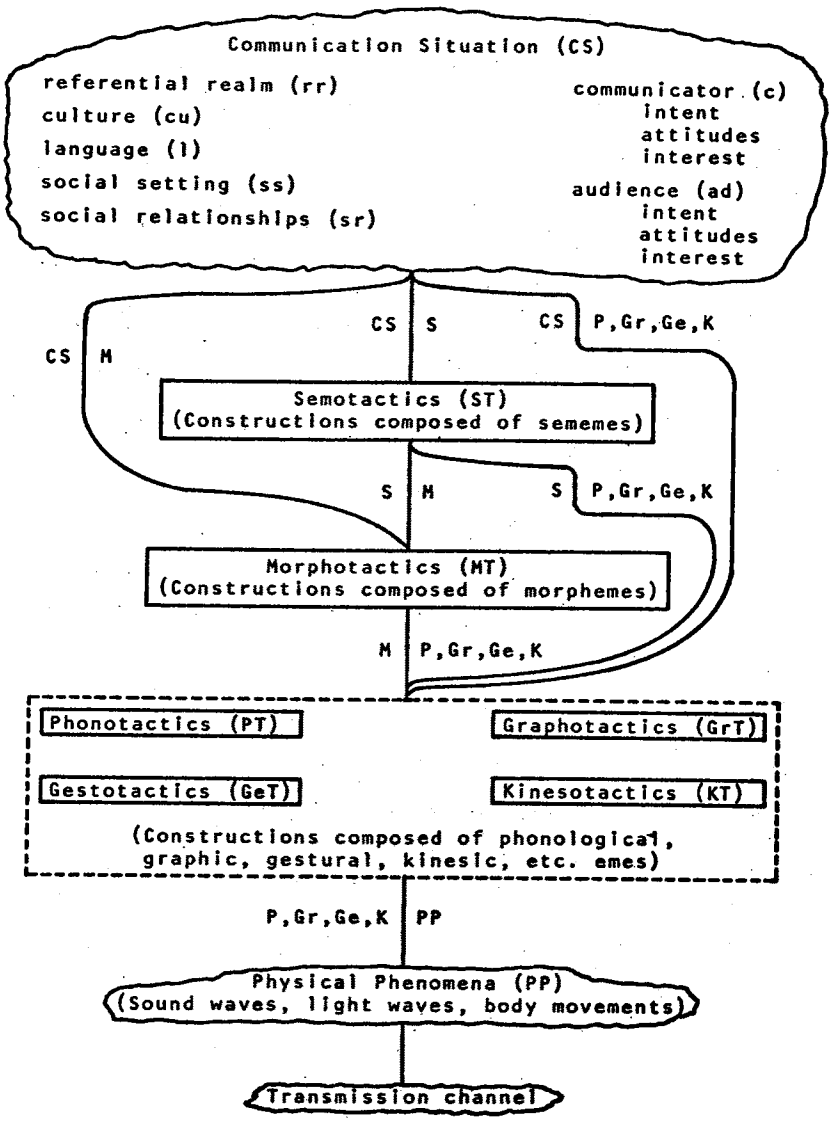


Fig. 2 A static communication model.

the language employed. Realization relationships are employed to encode these data on whatever strata are relevant.

1. Expression level traces

Certain incidences from the referential realm may be realized as nuclear propositions of the semantic discourse but at the same time be accompanied by a heightened interest and excitement on the part of the communicator which may be realized on the phonemic stratum by a wider spread in the pitch range, an increase in intensity (a louder volume), a faster rate of speaking, etc. There may also be accompanying kinesic signals of facial expressions, body movements, etc. On the other hand if encoding is via the graphemic stratum, the communicator may employ all capital letters, exclamation marks, underlining, special type styles, e.g. italics, etc. Special indentations and smaller print may signal quotation material. Parenthetical information is marked by enclosing parentheses, etc. Thus one examination of text material should be from the perspective of the expression level strata. Phenomena on these strata may be realizing semantic or communication situation information such as that just indicated.

2. Morphemic trace

A second stratal level is that of the morphemic stratum where the minimum element is the morpheme with morphemic distribution classes such as noun, verb, adj, adv, prep, etc. which combine to form morphotactic constructions such as words, phrases, the clause. Each distribution class may include simple morphemes, derived forms and compound forms (idiomatic or composite realization). Text material charted from the perspective of morphotactic constructions is illustrated in the Morphotactic trace chart of the beginning of Luke 8:22-39. Morphotactic constructions are viewed in my approach as being composed of constituents that have two parts. In these data, the constituents involve a member of a distributional class, or a morphotactic construction(embedding), plus its relative sequential position with respect to the other constituents of the construction (P=precedes, C=central, F=follows, subscripts 1,2,3= relative closeness to C if more than one constituent may precede or follow.). These constituents are similar to the slot:class type of tagmeme in the tagmemic model although slot was not formalized in the way presented here, but rather in terms of position within a formula. The concept of a construction composed of tagmemic type constituents as developed by Pike (1954) and Longacre (1960) has proven most useful for the tactics of all strata as well as for the realization relationships among the strata. I am therefore using constructions with n-ary constituents each having positional or functional relationships to the other constituents of that construction in contrast to an immediate constituent type of analysis typically associated with binary divisions.

A morphotactic trace of a particular text results in a chain of morphemic constructions and/or single morphemes. Thus, the beginning of the text found in the chart would be represented by the following morphemic chain:

Luke 8: 22-39 Monastic text	Snt ¹ P ¹ Word (Clause-Plu)	Snt ² C:Verbform, Clause ² , NP, Prep Phr					Snt ¹ P ¹ Word (Clause-Plu)	Snt ² C:Verbform (Clause-Plu)	Snt ³ P ³ Word (Clause-Plu)	Snt ⁴ P ⁴ Word (Clause-Plu)
		CI ¹ P ¹ Word (Clause-Plu)	Verb ¹ W (Verb-Plu)	CI ² P ² Word (Clause-Plu)	Verb ² W (Verb-Plu)	CI ³ P ³ Word (Clause-Plu)				
1 de		auton	egento it-happened	en mia ton hmeron one of-the days						
2 kai		he	enhe he-went-up	eis pion ship						
3 kai		hoi mdekal disciples of-him								
4 kai			elpen he-said	pros auton them						a sub dis100man eis let's-go tes 11000 other-side
5 kai			anexen he-took							
6 de	p ¹ gen pl m pionton auton sailing-they		apostonen he-let-sleep							
7 kai			katebe it-came-down	kallapa anemou storm of-wind	eis ton limen lake					
8 kai			aneplorento they-were-filling-up							
9 kai			ekinduneon they-were-letting-go							
10 de	p ¹ gen pl m prosefontes having-approached		disqiran they-aroused	auton him						p ¹ gen epistata, epistata apollumeta teacher teacher we-perish
11 de	hoi (digenes) Saula (one) having-been- aroused		epetiparon he-rebuked	to anemo kai to kladont wave tou hudatos water						
12 kai	p ¹ pass nom a having-become-afraid		eguzanto they-stopped							
13 kai			egento it-became	galime calm						
14 de			elpen he-said	autois to-them						tau he elatia huan where fish of-you(pl)
15 de	p ¹ pass nom pl m prosefontes having-become-afraid		edusan they-wondered							p ¹ gen pl m legontes saying pros alitous to-one-mother

morpheme de
 Clause = C: [VW=egeneto] + F₂: [PrepPhr=C:en + F: {NP=P₂:mía + P₁:tón
 + C: hēmerōn}]]

morpheme kai
 Clause = P:autos + C: [VW=enebe] + F₂: [PrepPhr= C:eis + F:ploion]

morpheme kai
 NP = P₁:hoi + C: maθetai + F₁: autou

morpheme kai
 Clause = C: [VW=eipen] + F₂: [PrepPhr= C:pros+F:autous]

Clause = C: [VW=dielθomen] + F₂: [PrepPhr=C:eis+ F: {NP=P₁:to +C:peran
 F₁: {NP=P₁:tes + C:limnes}}]]

morpheme kai
 Verb Word = anexθesan

(Note: de and gar actually occur following the first word of whatever construction follows them in this chain. They are not however viewed as constituents of such constructions. These are the only morphemes not charted according to absolute order of occurrence in the text.)

Noting the frequency of the morphemes de, kai, gar and hoti and the contrasting constructions for Verb Word (VW), Participle Word (PtW) and Infinitive Word (InfW), the morphemic chain was reorganized into the morphotactic trace chart given. A new line was started each time a morpheme kai, de, gar or hoti was encountered (with the exception of instances where kai alternatively was analyzed as a constituent within a NP as in Line 11). If more than one VW, PtW or InfW followed the de, kai, etc. these were charted, with any Clause constituents related to them, as sequentially ordered constituents of a morphemic Sentence. The first VW was entered in the C₁C column of the Sent^C. In some cases only a NP or Prep-Phrase followed the kai, de, etc. Heuristically these were charted in the C₁P column of the Sent^C, but they are not Clause constituents. The relative sequential positions for VW, PtW and InfW within the morphemic Sentence are maintained in the chart even though not all are present in most cases. Thus VW may fill Sent^C and F₃. In the latter case it is noted that it is semantic quotation material being realized in Sent^{F3}. Sent^C realizes non quotation material. A PtW may fill the Sent^{F3} or the Sent^{F2} positions. When the semantic realizee is a quotative, only Sent^{F2} is employed (Line 10). Apart from the quotative, we still have the question of why one position is selected over the other. Other instances of the PtW in both possible positions do occur later in the text. The InfW fills the Sent^{F1} position and in this text no alternative position was noted.

The details of the Clause constituents for the filler of the Sent^C position are given in five columns reflecting the relative sequential ordering of the morphemic distribution classes and constructions listed: VW, PrnW, NW, AdjW, PrepPhr. This combination of relative positions and distributional classes or constructions represent the constituents of the morphemic clause of Greek.

It should be noted that PtW's which are embedded within NP's have not been entered into the Sentence level charting of the trace. Within the Clause constituents charted under ^{Sent}C, it may be noted that PrnW's, NW's (or NP's) may precede or follow the VW. What controls the selection of one position over the other? When no morphemic reason seems apparent, as in this case, one then looks for semantic or communication situation reasons such as differences in semantic functions realized (however, in Lines 2 and 7, AGENT has been realized by either position), introduction of a new participant in the discourse (a possibility here), a difference in ranking among the participants in the discourse (very probable in this text), etc. As one identifies the semantic functions of each morphemic constituent a comparison of Lines 4 and 14 will raise the question of why a semantic ADDRESSEE is realized alternatively by a PrepPhrase versus a PrnW, each with appropriate cases. Although I normally do separate charting for referent identification studies it is seen in this chart that a referent may be realized by a noun, a pronoun, an affix on a VW or PtW, and at times by zero. What controls these choices? In the first 15 lines, there are 6 instances of de and 9 instances of kai. What controls that selection? If a PtW occurs in ^{Sent}P, de occurs (L 6, 10, 15). In some instances where no PtW occurs, de correlates with a change of the referent that is realized as subject of the VW (L 11, 14). Later in the text gar and hoti occur instead of kai or de. Why?

In addition to employing certain recurring morphemes and constructions such as VW, PtW and InfW to organize the morphotactic data of this trace, additional information has been entered into the chart that often proves helpful when reorganizing the data for semantic charting. This includes aspect/tense (a=aorist, p=present, imprf=imperfect, etc.), voice (passive, middle, active), and for PtW's the case, number and gender information signalled.

3. Semantic trace

The data in the semantic trace is organized around the information found in the morphemic trace. The first two columns on the left list the semantic propositions realized by the combinations of a morpheme kai/de, a morphemic VW construction, and aorist aspect. The fourth column has the propositions realized by a morpheme kai/de, a morphemic VW construction, and imperfect aspect. A morpheme gar/hoti plus a VW construction are the criteria for entering semantic proposition data in the last column on the right. Propositions realized by a VW but not preceded by kai, de, gar, or hoti are entered in the second column from the right. A proposition realized by a PtW plus aorist is in the fifth column from the left and those realized by a PtW plus present are in the next column, the sixth. Initially, all propositions realized by InfW's were charted in the third column, however, later those that realized quotation material were moved to the second column from the right. An example of a non-quotation InfW realization is:

	a	a	InfW	prft	ptacc	sg	n
de	ekselθon	idein	to	gegonos			

they-went-out to-see the had-taken-place Verse 35

Referential Plot trace										Lake 8-22-39										Semantic trace																																																																																																																																																																																																																																																																																																																																																									
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/cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW orisic	T ₁ Ev u	M ₉ /cal VW 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Ev u	M ₉ /cal VW orisic

The information recorded in columns 1 and 2 reflect a division of the minimum or obligatory constituents of a proposition in column 1 and any additional constituents present that expand the proposition, or one of its constituents, are charted in the second column. A more carefully drawn chart should identify the details of the obligatory constituents, e.g.

$$2 \quad Ev_{AC} = AG:human_j + ACTIV:go$$

It will be noted that in most semantic constructions the constituents involve a semantic function filled by a semantic distribution class or embedded construction. Semantic distribution classes include: things, actions, mental processes, psychological processes, perceptions, phasals, aspectuals, relationals, attributes_{th}, attributes_{act}, etc. Semantic functions in various kinds of propositions include: AG, GL, ACTIVITY, EXPERIENCER, STIMULUS, EXPERIENCE, REACTOR, REACTION, AFFECT, SPAT LOC, TEMPLOC, ITEM, ATTRIBUTION, CLASS, MEMBER, IDENTIFIED, IDENTIFIER, OWNER, OWNED, etc. Higher level semantic constructions include Interpropositions, Paragraph, Discourse and Conversation Block. The following higher level constructions are referred to in the Semantic trace chart:

$$\text{Temporal Arrangement}_{SEQ} = \text{PROP}_{PRIOR}:\text{Proposition} + \text{PROP}_{SUBS}:\text{Proposition}$$

$$\text{Temporal Arrangement}_{simul} = \text{PROP}_A:\text{Proposition} + [\text{PROP}_B:\text{Proposition} + \text{RELATION:simultaneous}]$$

$$\text{Logical Arrangement}_{SEQ} = [\text{PROP}_{PRIOR}:\text{Proposition} + \text{RELATION:reason, cause, grounds, etc.}] + [\text{PROP}_{SUBS}:\text{Proposition} + \text{RELATION:purpose, result, effect, conclusion, etc.}]$$

$$\text{Conversation Block} = \text{QUOTATIVE: Event}_{CV} + \text{QUOTATION:} \left\{ \begin{array}{l} \text{sememe} \\ \text{Proposition} \\ \text{Discourse} \\ \text{etc.} \end{array} \right.$$

Having organized the semantic trace data according to morphemic realization criteria, hypotheses are next formulated about how the propositions are related to one another within higher level semantic constructions. The propositions of column 1 are each prior to the subsequent proposition in the column and subsequent to the prior proposition. These propositions are analyzed as both interrelated in sequential Temporal Arrangements and as filling the foregrounded functions in Discourse structure. All other propositions in the chart with the exception of those in ConvBlk^{QUOTATION} column have a relationship to the proposition in column 1 that is on the same horizontal line or that is on the preceding line if no

proposition occurs on the same line in column 1. These are all Interproposition relationships but the kind depends upon whether the realization was a PtW, an InfW, a VW plus gar,hoti and also what aspect occurred. A PtW realizes a Temp Arrang. An Inf W in column 3 or a VW plus gar,hoti realize a Logical Arrangement. A VW plus de or kai realizes a Temporal Arrangement. Propositions realized by a gar or hoti are not a foregrounded part of this Discourse but rather are employed by the communicator to provide aside explanations to the audience giving reasons why certain events may have happened etc. Propositions realized by de or kai are relevant to Discourse structure. In Temp Arrangements, the proposition realized by a Pt W and aorist is PRIOR to the proposition in column 1, whereas one realized by a PtW and present is simultaneous with the proposition in column 1. It seems that the propositions in column 4 realized by kai or de, VW and imperfect are also simultaneous with the preceding proposition in column 1. Why the difference? This question is not answered at this stage, but the Referential Plot trace throws light on it. Another question is why are there any propositions beyond those in columns 1 through four?

The need for aside explanations and comments may explain the last column. It may also be noted that all QUOTATIONS require a QUOTATIVE. If the QUOTATIVE is not in column 1, then it is found in the column realized by PtW plus present. That accounts for some PtW's, as to why they may be present at all. On the other hand others are present still without explanations as to why. Another question is why are QUOTATIONS employed at all? A comparison of the content of columns 1 and the QUOTA. one make it appear that the communicator may be carrying out a double intent in this text. In column 1 we have an account of a historical sequence of events across time, a narrative Discourse or as it is labelled in Line 1 a "happening". In the QUOTATION column we get a series of statements and questions dealing with who this man is, what did people think about him, etc. A way of highlighting a purpose distinct from just a narrative account. A look at the constituents found in the second column raises the question of why are these so called optional constituents present at this point? These data provide a basis for hypotheses about Discourse structure such as: initially in the Discourse identify the type and purpose (it-happened) plus give a time setting (on one day). Immediately after this the major participants are introduced and a spatial orientation is given (I2,3,4). Actions that extend over a period of time seem to include phasals that begin and end them.

4. Referential Plot trace

The data in the Referential Plot trace is organized around the information found in the semantic trace. At this point referential realm data is being represented that the communicator has selected to include by referring to it in some way. In the REFERENTIAL REALM each referent performs or is performed upon individually in absolute time and space. There is no tense. Tense represents time in relation to a reference point. There is no ACCOMPANIER versus AGENT. Both are performers. There are no CLASS+MEMBER relationships, no QUOTATIVES, etc.

A column is provided for each referent, although for economy of space only one column is assigned to the disciples who act only as a group in this semantic trace. Relative times for each incident referred to for each referent affected by it are marked by horizontal time lines with the incidents filled in in each relevant column. An x is used for a referent that has been acted upon. In the case of semantic Line 8 and Referential Plot T₅, collocational clashes in the cognitive network of the semantic stratum led to interpreting the Proposition in Line 8 as figurative and assigning the role of filling up by winds and waves to the boat rather than to the people in the Referential Plot. One question is why such a shift is made in realizing what is being filled as the people on the semantic stratum. Ranking of participants in the semantic Discourse seems a likely factor here. This is probably also the reason only one referent is selected for realization in Line 2 and all the rest assigned to Line 3. Any lack of a one to one ordering between the times of the Referential Plot and the order of propositions in the semantic trace need some explanatory hypotheses. In this text the time line of the ranking participant (Jesus) has more specific ordering identified for the incidents while the time lines of the non ranking participants tie into that of the ranking one but things that happen previous to such tie-ins may be less specific in their ordering. In the charting in the Referential Plot it may be noted that when a referent is participating in an incident that continues across time, such as go in T₃-T₁₃, he may also participate in a second incident that continues across time, such as sleep in T₅-T₇. In the semantic cognitive network sleep has no relationship to go other than both being members of the action class. For a discourse to have coherence some coherence of things talked about is required. It appears that establishing this coherence may account for some of the PtW constructions. A semantic Temp Arrang_{simul} construction is employed in Line 6 which specifies that while the action of going involved the referent Jesus, he also was a participant in the action of sleeping. Coherence across otherwise unrelated semantic fields is thus established. Another type of relationship is involved however for the Temp Arrang_{simul} constructions found in Lines 8 and 9 where the morphemic realization involves *de* and *kai*, a VW and the imperfect. In Line 7 a new referent has been introduced, the storm. This occurs at T₅ in the Referential Plot. Lines 8 and 9 seem to stop the movement through time and tell us the state of each of the other referents previously in the Plot : at that same point in time. The people were in danger and the boat was filling up. It thus appears that although both signal Semantic Temp Arrang_{simul}, the VW plus imperfect implies same time but different referents, and the PtW plus present implies same time and same referent in the Referential Plot.

The hypotheses presented are tentative and illustrative based on a small amount of text. Additional studies are necessary to strengthen or alter them. Authors may differ, Discourse genre may

have different realizations, etc. The intent is to indicate ways of mapping a discourse on the four different stratal levels and to suggest how such mappings can lead to additional insights about discourse structure. The realization relationships between the strata are important as well as more details about the Discourse constituents. Very little mention has been made about participant identification studies but these also are most helpfully studied across the morphemic, semantic and referential plot traces,

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ELLIPSIS AND PRIOR MENTION IN JAPANESE CONVERSATION

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Textual cohesion, a concept central to the concerns of this paper, is defined by Halliday and Hasan (1976:4):

cohesion occurs where the INTERPRETATION of some element in the discourse is dependent on that of another. The one presupposes the other, in the sense that it cannot be effectively decoded except by recourse to it.

The particular type of cohesion I will examine concerns ellipsis in Japanese, or the substitution of a structurally required element by zero. Halliday and Hasan (1976:143) illustrate the notion of verbal ellipsis with the following sentence [their 4.2].

- (1) Joan bought some carnations, and Catherine some sweet peas.

They state:

The structure of the second clause is Subject and Complement. This structure normally appears only in clauses in which at least one element, the Predicator, is presupposed, to be supplied from the preceding clause.

Ellipsis of nominals and other elements is also possible, as is demonstrated by Thrasher (1974). His examples are presented in (2) [his 16, 20, 23], with ellipsed elements in brackets.

- (2) a. [I've] Gotta go now.
b. [Have you] Been in Ann Arbor long?
c. [It's a] Good thing we didn't run into anyone we know.

Thrasher (1974:7ff) points out three major constraints: one, the ellipsed elements are confined to sentence initial position; two the ellipsis only occurs in informal conversations; and three, the ellipsable elements belong to a small set of forms consisting of auxiliary verbs, subjects, articles, possessive nouns, and the

word if.

My concern here is with ellipsis in Japanese conversation. Elliptical expressions occur with much more regularity in Japanese, and carry a higher functional load. In order to make my comments about ellipsis in Japanese more intelligible, I will first present a brief description of relevant aspects of Japanese grammar.

Japanese has a basic SOV word order, although this word order is violated frequently in conversational settings. Grammatical relationships such as subject and direct object, as well as sentence level topics, are marked in their canonical form by postpositional particles. There are no definite or indefinite articles. The verb does not inflect for person or number; but does indicate a completed vs. noncompleted aspect [alternatively known as past vs. nonpast tense], as well as other aspect and mode distinctions. The sentences in (3) are constructed sentences designed to illustrate these basic facts.

- (3) a. taroo wa akiko ni okane o yat-ta.
 TP IO DO give-completed
 Taro gave Akiko some money.
- b. mitiko ga doroboo da!
 SB thief dopula
 Michiko is a thief!
- c. takamiyama wa toroNto kara moNtoriooru made
 TP SR GL
 ziteNsya de it-ta.
 bicycle IN go-completed
 Takamiyama went from Toronto to Montreal by
 bicycle.

ABBREVIATIONS: TP = topic; IO = indirect object; DO = direct object; SB = subject; SR = source; GL = goal; IN = instrument

Ellipsis in Japanese, as might be expected, does not conform to any of the constraints proposed by Thrasher for English. Ellipted elements may occur in any position, as the following examples from a videotaped conversation illustrate.² Ellipted elements are included in brackets, as are the corresponding English glosses.

ELLIPTED SUBJECTS

- (4) A. ...to iu to, yaku zyuuneNkaN hodo [anata] irassyaru
 no, amerika ni?
 ...So, for as much as ten years or so, [you]'ve
 been in America?

- B. s-soo desu ne, demo, [watasi] sono kaN, ittari kitari, nihoN to no aida, ittari kitari site masu kara.
 R-Right, during that interval [I]'ve been coming and going, uh, coming and going back and forth between Japan and America.

ELLIPTED SUBJECTS AND OBJECT

- (5) A. aitikeN tokuyuu no, anoo, miNwa mitai na mono wa [anata] gozoNzi nai desu ka?
 Don't [you] know any folktales or things like that that are characteristic of Aichi Prefecture?
- B. watasi [wa] komarimasu ne. [watasi] [miNwa mitai na mono] siranai N desu yo.
 No, I'm sorry. [I] don't know [any folktales or things like that] at all.

ELLIPTED SUBJECTS AND VERB

- (6) A-1. N, demo, [anata] itineNkaN izyoo wa, anoo, nihoN ni kaetta to ka, soo iu koto wa nai wake desu ne?
 Hm, but [you] were never back in Japan for over a year, were you? (lit. [that fact] doesn't exist, does it?)
- B-2. aa, [soo iu koto] arimasu yo, sotugyoo-
 Oh, I was, I gradua- (lit. [that fact] exists)
- A-3. [soo iu koto] aru N desu ka?
 Oh, you were? (lit. [that fact] exists?)
- B-4. N, [watasi] aNdaagurazyueito o sita ato itineNhaN ka nineN gurai, nihoN ni [imasita].
 For a year and a half or two years after [I] finished my undergraduate work [I] [was] in Japan.

Ellipsis occurs in any speech style in Japanese, including planned [see Keenan (1977)] or nonspontaneous discourse [see Hinds (1976a, 1978a)], as the following segment taken from Nihongo Saihakken (Japanese Rediscovered) by Ikeda Mayako illustrates.

- (7) kono buN no buNpoo wa kono teido no syoosetu o yomu gakusei ni totte mattaku moNdaï ni naranai kurai kaNtaN na buNpoo desu. [kono buNpoo wa] gogakuteki ni kaNtaNsugite, nihoNZiN kyoosi no hoo wa tui kono buN ni tokubetu no tyuui o haraimaseN ga,...

The grammar of this sentence is so straightforward that it would not cause any problem for students who read novels of this type. [This grammar] is linguistically all too straightforward, and so Japanese professors will not pay any particular attention to this sentence, but...

Finally, there are no constraints on what may be ellipsed. Nominals have been ellipsed in every example presented so far. A verb has been ellipsed in (6B-4) [see Hinds (1976-77) for more examples of verbal ellipsis in Japanese]. In (5B), the topic particle *wa* has been ellipsed. Other examples of particle ellipsis are presented in (8) through (10).

- (8) ee to ne, tokoro de ne, tyotto hanasi [ga] kawarimasu
kedomo ne.
Um, by the way, I'm going to change the topic a bit here.
- (9) anata [wa] daigaku de wa nani [o] seNkoo nasatta no?
What did you major in at college?
- (10) de, hawai [ni] kita no wa itu desu ka?
Well, when did you come to Hawaii?

The phenomenon of ellipsis is so pervasive in Japanese, and so alien to English speakers, that it is usually commented on in the first lesson of Japanese textbooks [see, for instance, Alfonso (1966:2), Jorden (1963:9)]. Most descriptions claim that elements are 'missing' if they can be understood from context. In fact, of course, ellipsis in Japanese conversation does not eliminate everything that could possibly be understood from context. In a series of papers [Hinds (1976-77, 1978a, to appear a)], I have attempted to elucidate the principles governing ellipsis, primarily of nominals, in Japanese conversation. In broad outline, ellipsis is possible when the referent of a nominal is both registered in the discourse registry, and is, or is part of, the current paragraph topic or subtopic.

The form of the registry is discussed in detail in Hinds (1976a:27ff). The registry is divided into two sections: a temporary section and a permanent section. Items in both sections are concepts which assume the status of unique reference by virtue of being mentioned in the previous conversation, for the temporary section; or by being a noticeable part of the current nonlinguistic environment, for the permanent section. Entry in the registry is one condition for the use of subsequent means of reference such as pronominalization, topicalization, definitization, and ellipsis. Other conditions help to differentiate these processes.

The registry of concepts is not absolute, and always operates

with respect to the particular conversational participants and their perceived relationship to one another. Thus, one participant is apt to refer to a concept with an abbreviated means if he believes his addressee also has the concept registered. If, in fact, the other participant does not have that concept registered, miscommunication results; and a 'repair-sequence' in the sense of Schegloff et al (1977) is necessary.³

The concept of paragraph topic and subtopic is explored in Hinds (1976a, 1976-77, 1978a, 1978b, to appear b), and in Longacre (1976), Mandler and Johnson (1977), Meyer (1975), Thorndyke (1977), among others. Conversations are organized in terms of paragraphs, or those units of speech which maintain a uniform orientation with respect to participants, location, temporality, or theme [see Grimes (1976) for details]. One possible development of a conversation is for it to advance from autonomous paragraph topic to autonomous paragraph topic. A second type of conversational development is for participants to discuss the current paragraph topic in a successively detailed manner; that is, for them to examine the paragraph topic from various perspectives. Currently, I am investigating a large number of casual interviews among Japanese subjects which have been videotaped over a period of three years. The single thread which binds all of these interviews is that in each the interviewer probes the interviewee for personal information. The overall paragraph topic, then, is the interviewee. Various perspectives on the interviewee's life arise: Where he was born; where he grew up; what his hobbies are; what places he has visited; what type of mate he is interested in. Each of these areas constitutes a sub-topic. These sub-topics may contain various perspectives as well. For instance, in the case that someone spends time in three different places while growing up, the discussion surrounding each of these places constitutes a sub-sub-topic. Note, incidentally, that none of these sub-topics is autonomous in the way a paragraph topic is; that is, the participants may discuss Kobe as one place the interviewee has spent time while growing up. Thus, Kobe is discussed in relation to the places the interviewee grew up, and the fact of growing up is discussed in relation to the interviewee doing it. Each sub-topic is therefore discussed only with respect to its relationship with its super-ordinate topics.

As discussed in Hinds (1976a), felicitous ellipsis is governed by two major principles. First, the item to be ellipsed must be in the discourse registry; that is, it must have been either mentioned in the prior discourse, or it must be in the noticeable nonlinguistic environment of the participants. Second, the item to be ellipsed must be a paragraph topic, or a sub-topic, or it must be a part of one of these topics [this is discussed in detail in Hinds (1976-77)].

As pointed out in Hinds and Shibatani (1977), and elaborated

on in Hinds and Hinds (to appear), there is a normal progression which leads from the introduction of an item to the eventual ellipsis of that item. That is, there is a typical way in which an item gets to be the paragraph topic in Japanese conversation. An item is typically introduced into a conversation (or discourse) by being marked with a nontopicalizing particle, such as the subject marker ga. Next, the item is 'spotlighted,' or made the focus of the addressee's attention, often by being marked with the topicalizing particle wa. This process firmly establishes the item as the paragraph topic and so, on next reference to that item, ellipsis may be used. This is illustrated in the following section of an oral rendition of the Japanese folktale Momotaroo. "Peachboy." Momotaro has been walking to an island inhabited by ogres to do battle with them. He has already picked up two retainers to help in his battle, a dog and a monkey. He now encounters a pheasant.

- (11) a. sibiraku mata aruite iku to koNdo wa kizi ga toNde
kimasita.
And so they walked for a while, and next a pheasant
came flying down to them.
- b. Kizi wa saNniN--eeto, hitori to nihiki ga aruite ru
no o mite, naNdaroo to omotte.
The pheasant looked at the three people, er, ah,
the one person and two animals walking along, and
thought, what is this?
- c. [Kizi] momotaroo--ha, ha, minasaN de doko ni iku N
desu ka to kikimasita.
[The pheasant] asked, "Momotaroo, oh, ha ha, um,
where are you all going?"

Given the framework outlined above, ellipsis in Japanese is very similar to pronominalization in English, a fact noticed initially in Kuroda (1965). I follow Norman et al (1975:69ff) in assuming that pronominalization, like ellipsis, is a signal that a concept which the speaker believes the addressee can interpret unambiguously is being talked about. The use of a pronoun in English is such a powerful signal to this effect that upon hearing a pronoun in a conversational vacuum, the addressee has no alternative but to attempt to interpret it. Whether the addressee will be successful or not depends on his knowledge of the speaker, or of the world in general. Thus, when a speaker says (12) as his opening remark in a conversation:

- (12) She wouldn't let me wear my orange tie today.

the addressee is forced to attempt to interpret the pronoun she. Knowledge of the speaker's marital status, or home life, and knowledge of who can prohibit the wearing of certain items of apparel under what conditions will contribute to the success or

failure of the addressee's interpretation.

In English, the pronoun is an overt signal that an interpretation, or knowledge structure search, is necessary. In Japanese, however, how does ellipsis signal this necessity? That is, how does the absence of an item make itself known? Briefly, the speaker of Japanese associates a given verbal with a set of obligatory surface case relationships [for details, see Hinds (1976-77, to appear a), Taylor (1971, 1973)]. The verbal ageru 'give,' for instance, may be specified as:

- (13) [NP ga; NP ni; NP o] ageru 'give'

This means that in a completely specified sentence all of these obligatory case relationships will be present, as in (13a).

- (13a) momoe ga hiromi ni sakana o ageta.
Momoe gave a fish to Hiromi.

Thus, when a speaker of Japanese hears a sentence containing the verbal ageru, he knows that he has to identify at least three items.⁴ When an obligatory item is missing, that is, when it is ellipted, this is as clear a signal to the speaker of Japanese to initiate a knowledge structure search as the occurrence of a pronoun is for a speaker of English.

At this point I turn to some examples of data which pose a potential problem for the theory of ellipsis as it has been outlined so far. In (14), two Japanese men in the United States are talking about an article in a recent Japanese news magazine.

- (14) A-1. kiriNzi saN, syuukaNsi miru to, are da ne,
haizyakku⁵ no zikeN ga sootoo rippa ni hoodoo
sarete ru nee.
Say, Kirinji, if you look at the weekly
magazines, you see a lot about that stuff, that
hijacking.
- K-2. ya, kinoo mo atta ze, kinoo mo.
Yeah, hey, there was one yesterday too,
yesterday!
- A-3. aa, korya amerika de?
Oh yeah, was this one in the States?
- K-4. uN.
Yeah.
- A-5. aa, zya, amerika de haizyakku te no wa, are da ne,
nitizyoosahaNzi na N da ne.
Well, in the States, hijacking is becoming, what
should I say, a common everyday occurrence.

- K-6. soo da ne, omosiroi zo, kinoo no wa.
Yeah, you're right, it was interesting though,
that one yesterday.
- A-7. sore, siNbuN ni dete ta?
Was it in the paper?
- K-8. [haizyakku sita hito] takkusu de atama ni kite
ne, soide haizyakku yattyatta N da, yoNhyaku
doru no takkusu.
[The hijacker] got pissed off at some tax, so he
hijacked a plane, a \$400 tax.

In (14K-8), the noun phrase 'the hijacker' has been ellipted. The ellipted element is interpreted unambiguously by all informants who have reviewed this section of audio tape as 'the hijacker' although, to be sure, informants may choose different lexicalizations to refer to the hijacker. That this example contains an instance of ellipsis is clear, since 'the hijacker' is a structurally required element given the theory of case relationships developed above, and it is uniquely interpretable. Case frames for both the expression atama ni kuru 'get pissed off' and haizyakku yaru 'hijack' require an animate subject.

- (15) a. [NP ga, NP de] atama ni kuru 'get pissed off'
b. [NP ga] haizyakku yaru 'hijack'⁶

The potential problem for the theory of ellipsis is that the item 'the hijacker' has not been mentioned previously, nor is there anything in the immediate linguistic environment which would allow for this type of ellipsis.

What is happening is a process similar to one discussed by a number of researchers in the past with reference to definitization in English or topicalization in Japanese, but never, to my knowledge, with reference to pronominalization in English or to ellipsis in Japanese. Karttunen (1968), for example, was concerned with how noun phrases in English may be made definite. He discussed a large number of cases, the most relevant to this discussion is presented in (16) [his (18iia)].

- (16) I was driving on the freeway the other day when
suddenly the engine began to make a funny noise. I
stopped the car and when I opened the hood, I saw
that the radiator was boiling.

He states (1968:22-3)

What seems to be happening here is the following.
To say that somebody is driving on the freeway
entails that there is a car which he is driving...

If there is a car, it probably has certain components which typically belong to a car: engine, hood, radiator,...It seems that once a car has been introduced into the discourse, even if only by implying its existence, what also is introduced are all the standard components of that particular car...

Chafe (1971:64) was concerned with the way a verb may establish the definiteness of subsequent noun phrases. He demonstrated with example (17) [his (48)] that an event or state has, or may have, a cause, various accompaniments, and various results, and that manifestations of these may be definitized without prior mention.

- (17) a. My neighbor's house burned down last night.
 b. The cause was some defective wiring. [CAUSE]
 c. The flames could be seen for miles. [ACCOMPANIMENT]
 d. The damage was extensive. [RESULT]

Hinds (1976a) demonstrated that similar conditions exist in Japanese, and that the parallel of definitization in English is topicalization in Japanese. In Hinds (1978a), it is shown that the connection between an event and the subsequent topicalization of an item can be quite complex.

- (18) kesa ziipaN o kaoo to sita. sono toki uriko wa boku ni
 au ziipaN wa nai to itta.
 This morning I tried to buy some dungarees. However,
the salesgirl said that there weren't any that would
 fit me.

The reason uriko 'salesgirl' can be topicalized on first mention is

because uriko has been entered into the registry by implication. An event is registered: the fact that I tried to buy dungarees. An accompaniment of buying dungarees, at least in my experience, is that it is done inside a store. This registers a store by implication. Also within my experience, a store has a necessary part connected with buying and selling: a salesgirl. Thus, this chain of implications allows uriko to be topicalized on first mention.

Independently, the concept of a script has been developed by Schank and Abelson (1977). They (1977:41) define a script as

a structure that describes appropriate sequences in a particular context. A script is made up of slots

and requirements about what can fill those slots...
Thus, a script is a predetermined, stereotyped
sequence of actions that defines a well-known situation.

They (1977:41) further see a relationship between definite noun phrases in English and the context in which they occur.

Scripts allow for new references to objects within them just as if these objects had been previously mentioned; objects within a script may take 'the' without explicit introduction because the script itself has already explicitly introduced them.

If we return to example (14), we see that, under the assumption speakers of Japanese have a 'script' for hijacking, a necessary role in the script is the hijacker. The hijacker is therefore registered by implication and may be referred to on first mention by ellipsis, with no resulting confusion.

The concept of a script is a major advance over Chafe's concept of causes, accompaniments, and results, since the script suggests the way material may be organized in memory. Analogous to the fact that a store has a salesperson, as in example (18), adult speakers of a language with a normal range of experience know that a consulate has workers who interact in predictable ways with persons going to them on business. In the next section of dialogue, M has just been asked how he got a student visa to come to the United States.⁷

(19) M-1. NN, boku no baai desu to ne.
Right, in my case.

M-2. tookyoo ni arimasita amerika taisikaN no yoko ni
kuttuite ru ryoozikaN ni itte,
I went to the consulate that's attached to the
side of the American Embassy in Tokyo, and

M-3. sono aituNtei o [ryoozikaN no hito ni] misete,
I showed that I-20 form [to a person in the
consulate], and ...

Because M has assumed that his addressee has the script for government business interactions, he does not overtly express to whom he showed his I-20 form.

The concept of a script must be modified to some extent to account for other instances of ellipsis on first mention. Many of these instances of ellipsis do not refer to items in a sequence of actions, but rely on generalized knowledge structures which are shared by all normal speakers of a language. As the following example demonstrates, the accompaniment does not even have to be animate.

- (20) N-1. ano ne, seNsyuu no raihu magariin no sa, saigo no koromu ni sa, aa, paatei syotto tte no ka, are no sa, siriizu no syasiN ga dete N da yo ne.
Hey, in last week's Life Magazine, in the last column, there's a picture series called something like "Parting Shot."
- N-2. yakyuu no sa, anoo, siai de sa, koohuN sityatte, hitori no wakai ne, ozyoosaN ga ne, minisukaato no ozyoosaN ga sa,
At a baseball game, this girl, a girl in a mini-skirt, this young girl got excited, and
- N-3. [ozyoosaN] [yakyuu o site iru tokoro e]
tobidasite kite,
[she] jumped down [onto the playing field], and
- N-4. [ozyoosaN] naNtoka howaado to iu, anoo, pureyaa ni kisu site sa,
[she] kissed this player whose name is something like Howard, and...

In (20N-2), the girl is introduced.⁸ In (20N-3), the girl is ellipted because she has been mentioned previously and because she is now the topic of conversation. Also in (20N-3), the place the girl jumped to has been ellipted⁹ because it is generalized knowledge that tells us that there must be a playing area for a baseball game.

By way of conclusion I will summarize my findings on ellipsis in Japanese, and point to areas in which future research is necessary. Ellipsis is similar in many respects to pronominalization in English. In particular, an instance of ellipsis signals to an addressee that a search of knowledge structures is required. The success of a knowledge structure search depends on the addressee's ability to determine the current paragraph topic or sub-topic, as well as the ability to recall which items have been entered into the discourse registry, either through prior mention or by implication. Typically, items are ellipted by following a three-step process: they are mentioned, spotlighted, and then ellipted. Apparent exceptions to this sequence occur in Japanese, but only when the ellipted item is a necessary part, either animate or inanimate, of a concept which has been spotlighted.

I have assumed that concepts registered in the discourse registry parallel the way concepts are stored in memory. Specifically, these concepts are displayed in a hierarchical fashion when appropriate. This type of approach claims that the organization of conversation parallels the organization of knowledge structures. In this I share a perspective elaborated on by, among others, Schank (1978:428):

For a long time I have held the belief that there exists a strong relationship between the rules of conversation and the rules of association in thought. When a person receives an input he begins to think about it. If he chooses to make a response to the input his choice represents one of the many possible thoughts that he could have had in response to the input.

The legitimacy of this proposed relationship between conversational structures and knowledge structures should become a major area of investigation in the future.

While there is a strong correlation between English pronominalization and Japanese ellipsis, there are significant differences as well. Normally, ellipsis in Japanese corresponds to pronominalization in English, as has been seen in almost every example presented in this paper. However, for those cases in which ellipsis occurs because a superordinate concept has been introduced, pronominalization in English is not possible. Examine once again examples (14K-8), (19M-3), and (20N-3). In every case ellipsis occurs in Japanese while a full noun phrase is used in the English translation. The precise nature of this difference deserves much greater attention in future research, but I will suggest, at least, that one of the reasons for this discrepancy is a different attitude toward the necessity of specifying concepts verbally in the two languages.

Doi (1974) has recognized that Japanese people are much more sensitive to the atmosphere of a conversation than to the actual utterances that comprise the conversation. He states (1974:20) that

for the Japanese, verbal contribution is something that accompanies non-verbal communication and not the other way around.

He also states (1974:21) that

Empathic communications are more important to Japanese. We can feel without touching.

Since I do not wish to end this paper on such a highly metaphorical note, I will point out that many researchers, Monane and Rogers (1977) for example, have claimed that the cognitive map with which Japanese read their world is significantly different from the English speaker's. Japanese tend to be more 'situation-focused,' while speakers of English tend to be more 'person-focused.'

More concretely, Tsunoda (1978) has claimed that the organization of the brain of monolingual speakers of Japanese is

unique in the world. Specifically, the left hemisphere of their brains receives a wider range of sounds than the left hemisphere of non-Japanese brains.

Given these significant cultural and physical differences between Japanese speakers and the fact that ellipsis and pronominalization are not precise analogs should not surprise us at all. The integration of all of these observations could form a significant area of investigation for the future.

FOOTNOTES

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¹ It is quite possible that this constraint will have to be amended, since data reported by Atkinson et al (1978:134-5) illustrate noninitial ellipsis:

- (a) C: ...Ray has--((background noise ceases))--just reminded me might as well bring this one up as well just to mention it...

Significantly, the ellipsis is clause initial, and if the ellipted items were present they would occur with low stress.

² All of the Japanese examples presented in this paper are taken from videotaped or audiotaped materials. I wish to acknowledge the assistance of a number of people in the preparation of these materials: Wako Hinds, Terry Klafehn, Mariko Michihara, Kazu Nagatomo, and Mark Thorpe.

³ The word 'necessary' is too strong, since the social relationship between the participants will determine whether or not an 'other-repair' is permissible. See R. Lakoff (1973) for details on how 'rules of politeness' may constrain what type of information is requested in a conversation.

⁴ Other case relationships, such as time, place, etc., are optional and are not searched for in the same way.

⁵ The expression haizyakku suru came into the Japanese language as a loan word from English, officially in 1970, according to the Konsaisu Gairaigo Jiten (Concise Foreign Loan Word Dictionary). Its obligatory case frame is somewhat different from English 'hijack' in that the direct object is incorporated into the verbal. The verbal means, more precisely, 'to hijack something like an airplane.' According to Shozo Kurokawa [personal communication], Japanese have given a false etymology to this word in which the syllable hi- is assumed to refer to 'high in the air.' This has resulted in such creations as basuzyakku suru 'to hijack a bus.'

⁶ Verbals are regularly created in Japanese by adding an equivalent of the English verb do to a nominal: beNkyoo 'study' + suru 'do' -- 'to study'; deNwa 'telephone' + suru 'do' -- 'to telephone'; etc. There are two verbals which mean 'do': suru and yaru. Both have slightly different connotations in terms of

politeness and intimacy, as well as in terms of syntactic cooccurrence restrictions. Verbals formed with suru may take direct objects:

- (i) watasi wa nihoNgo o beNkyoo suru.
I'm going to study Japanese.
- (ii) watasi wa hikooki o haizyakku suru.
I'm going to hijack a plane.

Verbals formed with yaru do not allow direct objects in the same way, since the nominal itself is a direct object with an ellipted direct object particle:

- (iii) *watasi wa nihoNgo o beNkyoo yaru.
- (iv) *watasi wa hikooki o haizyakku yaru.

To specify the object when a verbal is formed with yaru, a possessive construction must be used.

- (v) watasi wa nihoNgo no beNkyoo (o) yaru.
Japanese 's study
I'm going to do Japanese study.
- (vi) watasi wa hikooki no haizyakku (o) yaru.
plane 's hijack
I'm going to do a plane hijacking.

For this reason, the obligatory case frame associated with haizyakku yaru does not contain an NP o constituent as does the case frame associated with haizyakku suru.

⁷After his specification that this is his experience in (19M-1), M uses ellipsis to refer to himself, as is appropriate in first person narratives in Japanese.

⁸Interestingly enough, the girl is introduced on first mention through a process known as 'postposing' [see Hinds (1976b) for details]. An element is moved from its normal position in the sentence to a position following the verb. This construction is also known as the 'afterthought' construction, and one of its potential functions is to reinsert into the sentence an item which the speaker originally thought was elliptable, but which on second thought was determined to be necessary.

⁹Strictly speaking, the place from which the girl jumped [NP kara] should also be specified. However, as pointed out by B. Mathias [personal communication], a number of concepts are regularly omitted from conversations through default. Their identities are of no consequence for the topic under discussion and so are not specified.

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A CONTEXT CONSTRAINT ON SYNTACTIC
ANALYSIS IN MANDARIN CHINESE

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Rohsenow (1978) analyzed the Mandarin Chinese Perfect markers le and mei-you as being combined tense/aspect markers conveying both perfective aspect as well as the ordering relation of relative anteriority. Using the theory of time specification developed by the philosopher Hans Reichenbach (1947), it was shown that Mandarin optionally marks the ordering relation between a Reference Time (RT), a relation known as "relative tense". (Absolute tense, the relation of RT to Speech time, is not marked in Mandarin.) Perfectivity was further identified with a logical operator BECOME as defined in von Wright's (1968) logic of change. The Perfect was then analyzed in terms of the 'syntax and semantics' model of componential analysis to consist of the logical operator BECOME (indicating perfectivity) subordinated to an existential predicate (identifiable with both existential verbs and with the verb have) which accounted for the component of relative anteriority.

The present paper shows, however, that while the type of componential analysis known as 'syntax and semantics' gives some insight into the semantic make-up of the Perfect in Chinese, it nonetheless fails to give a satisfactory syntactic analysis of a traditional problem in the analysis of Mandarin Chinese, the occurrence of the item le in sentences such as those in (1):

- (1.a) Ta he cha le.
he drink tea le "He has/had drunk tea."
(1.b) Ta he le cha.
he drink le cha "He drank tea."

We shall see below that the previous analysis is inadequate to differentiate between the underlying structures advanced for each of these sentences unless discourse-contextual factors which of necessity go beyond the limits of the sentence are taken into consideration.

Understanding the true nature of the Perfect and its function in the time deixis marking system of Mandarin clarifies the interaction of Mandarin verbs with the so-called 'verbal suffix le' and the 'sentential particle le'.

A sentence such as (2)

- (2) Ta lai le
he come le

may be translated as 'he came', 'he has come', or 'he had come' depending on context. Because le indicates only that a change of state from (a state of) not coming to (a state of) coming has (had/will have) taken place, le predicated of lai 'to come' only describes some amount of coming as 'having come about'. But if no specific

Reference time (RT) is given (which might orient us towards Speech Time (ST)), then we have no way of knowing where to place such an isolated utterance in the time universe. Of course, in real life discourse, such Reference Time axes are usually obvious from context, either elsewhere in the discourse, or at least from the extra-linguistic 'context of situation' (cf. Malinowski 1923; Firth 1957).

As is common in human languages, in the absence of any specification to the contrary, RT will be taken (by default, as it were) to the the moment of utterance, 'now'; 'the present'. Thus (1) ta lai le would ordinarily translate as 'he came' or 'he has come (as of now)'. In a certain context, however, it might be clear that le indicated anteriority to an earlier RT, as in (3):

- (3) (Wo qi lai de shi-hou) ta (yijing) lai le.
 I up come of time he already come le
 "(When I got up) he had (already) come."

A similar analysis may be advanced for transitive sentences containing a 'sentence final particle le', as in (4):

- (4.a) Ta he cha le.
 he drink tea le "He has drunk (some) tea."
 (4.b) Ta he san bei cha le.
 he drink three glasses tea le
 "He has/had drunk three glasses of tea (so far)."

In the absence of any explicit or contextual specification to the contrary, such a 'sentence final' le is taken to mean that the state or action in the sentence commanded by the (operators underlying) 'sentence final' le 'has' come about as of the time of utterance. However, if context, either explicit or implicit, indicates the contrary, a different reading is possible, as in (5):

- (5.a) (Wo qi lai de shi-hou), ta(yijing)he cha le.
 I up come of time he(already) drink tea le
 "(When I got up), he had (already) drunk some tea."
 (5.b) (Wo qi lai de shi-hou) ta(yijing) he san bei cha le.
 "(When I got up), he had (already) drunk three glasses of tea (so far)."

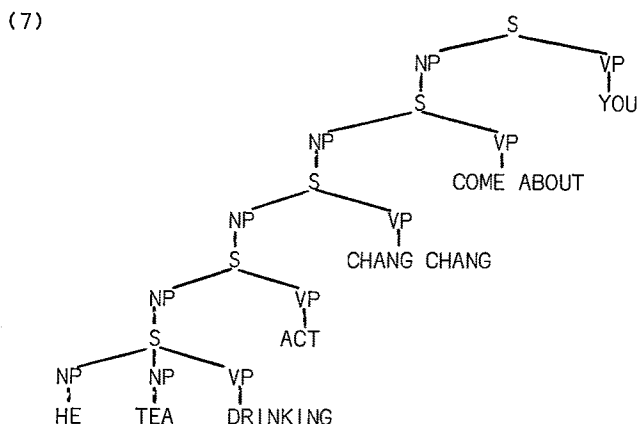
(Sentences such as those in (4) with only a 'sentence final' le also have a simple change-of-state reading in which a general change of action or habit is predicated; i.e., (4.a) 'He drinks tea now'; (4.b) 'Now he drinks three glasses of tea (as opposed to some other number).')

The so-called 'sentence final' le represents (cf. Rohsenow 1978) a combination of the operators COME ABOUT plus the existential predicate YOU which together have the remainder of the predicate in their domain. (Sentence (6.b) is given to provide context for sentence (6.a).

- (6.a) Ta changchang he cha le.
 he often drink tea le
 "He often drinks tea (now)."
 (6.b) (Congqian ta bu he cha, keshi xianzai)
 ta changchang he cha le.

(Formerly he did not drink tea, but now)
he often drinks tea."

Thus in a sentence such as (6.a), the 'sentence final' le (i.e., COME ABOUT plus the existential verb YOU) must command the adverbial chang chang 'often' as in (7):



giving the readings, 'He drinks tea often (now)' or 'He('s) started drinking tea often (now/then).' If 'sentence final' le were commanded by chang chang, the proposition would assert that the one time change from 'not drinking tea' to 'drinking tea' came about not once, but repeatedly, a logical contradiction.

With some transitive predicates, however, it is possible to distinguish between the so-called surface 'verb suffix' le and 'sentence final' le depending on the relative height of the operators which underlie these two surface le's in underlying structure. Thus while (4.b) with 'sentence final' le alone may mean 'he has (had) drunk three glasses of tea (so far)', (8) means only 'he drank three glasses of tea':

- (8) Ta he le san bei cha.
he drink le three glasses tea
"He drank three glasses of tea."

And, as we shall see below, a sentence such as (9), in an acceptable context, means 'he drank (some) tea':

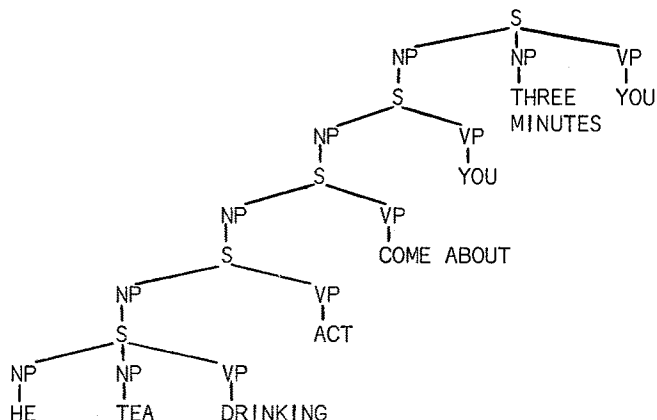
- (9) Ta he le cha.
"He drank (some) tea."

Dealing first with the quantified predicates, we may analyze sentences such as (8) as in (10) (cf. K Mei 1972:251):

1970: 173-7); G. Carden 1976). Such quantification may be of the object, as in (8) above, of the entire event, as with the so-called 'time as a measure of action' durationals, as in (14), or with degree complements of Change of State (CS) verbs, as in (15):

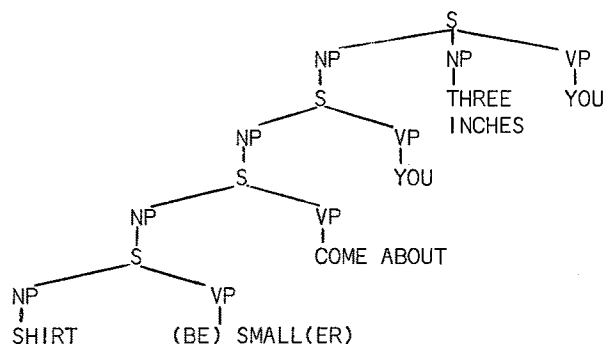
- (14.a) Ta he le san fen zhong de cha.
he drink le three minute clock of tea
"He drank tea for three minutes."

(b)



- (15.a) Chenshan xiao le san cun.
shirt small le three inches
"The shirt shrank/is small by three inches."

(b)



In either case, because the highest predicate is a simple 'existential presentative' assertion of the existence of a state (cf. Givón 1975: 20), such quantified sentences are felt to sound 'complete' and capable of standing as independent utterances in isolation.

A problem arises, however, with the analysis of unquantified transitive predicates when no such higher predicate is present to account for the surface positioning of the 'verbal suffix' le immediately after the verb and before the complement. Thus, while all speakers of Mandarin accept sentences such as (16.c) (=4.a),

many "older" speakers of "Peking" Mandarin are said to object to utterances such as (16.a) in isolation, feeling that they are 'incomplete', or synonymous with the dependent clause in (16.b) and preferring a sentence as in (16.c) or (16.d):

- (16.a) ?Ta he le cha (.)
 "He drank (some tea/Having drunk some tea, he..."
 (b) Ta he le cha (yihou) jiu zou le.
 he drink le tea (after) then leave le
 "(After) having drunk some tea, he left."
 (c) Ta he cha le.
 "He drank/ has (had) drunk(some) tea."
 (d) Ta he le cha le.
 "He had (had) drunk (some) tea."

As we have noted, a 'sentence final' le provides the listener with the RT 'moment of utterance' (= ST). When the surface le is positioned 'inside' the surface verb phrase, however, many speakers feel at a loss for some higher predicate which would orient them. (Note that the higher predicate in sentences with quantifiers such as (8), (14), or (15) is simply the statement of existence conveyed by the YOU in the highest predicate.) IN ISOLATION, out of context, such sentences feel semantically 'incomplete'.

It is interesting to note, however, that not only are sentences such as (16.a) cited in isolation by Chinese linguists (e.g., Wang 1946:144; Teng 1973:17), but also that M. Spencer found that seventy percent of sentences containing verb and object and le in the dialogue plays of the modern vernacular author Lao She which she examined consisted of such "V -le O" constructions (Spencer 1970:26).

K. Mei (1972:287-8) notes that:

Professor Lian Shang Yang has told me that the [sentence] final le is required in all cases when there is an indefinite-post-verbal phrase, but I think this rule probably reflects the Peking dialect spoken by older generations. To the younger people, I'm quite sure, the following sentences are all well-formed:

- [17]a. ta zai Jiashou fa le cai "he got rich in California"
 b. wo zuotian kan le dianshi "I watched TV last night"
 c. wo [jiantian] zaoshang le le fa "I had a haircut this morning."

[sic, but my additions, J.S.R.]

From the point of view of the present analysis, what is significant about the sentences in (17) is that the adverbials (which we have seen may be analyzed as higher predicates commanding the entire remainder of the predication -- cf. G. Lakoff 1970:165-183), all provide a context for the coming about of the action predicated in the subordinate S which they command. It appears then that the precondition for placement of le within the surface verb phrase is the presence in the context of a Reference Time to which the coming about of the state or event commanded by (the operators which underlie the surface) le may be oriented. Such a context may be provided ex-

plicitly, as by the higher quantifiers in (8), (14), or (15), or by a higher matrix sentence, as in (16.b), by an adverbial, as in (17), or by the presence of a higher 'sentence final' le, which implies time of utterance (ST) as RT, as in (16.d). On the other hand, the context for the utterance containing the 'verbal suffix' le may occur beyond the limits of the sentence or utterance, either in terms of explicit or implicit time references in othersentences in the discourse, or in the extra-linguistic 'context of situation'. Note then that to account for the placement of the 'verbal suffix' le in the surface structure, we are forced beyond the purely formal syntactic condition tentatively proposed above that a higher predicate command the (operators underlying) le in underlying structure. It appears that we can only fully account for the placement of 'verbal suffix' le in surface structure in terms of a semantic requirement that a contextual Reference Time be provided, either explicitly in the sentence or discourse, or implicitly by the context of situation.

A related problem in English has been noted by C. Smith, who notes that sentences similar to those in (18) are "somewhat odd in isolation [and] are felt to be [semantically] incomplete." (1978:10).

(18.a) John had written the article.

(b) John had written the article three days before.

As Smith notes, what is odd about such sentences is that they lack a Reference Time. As shown in Rohsenow (1972), in sentences such as (18a/b) both the auxiliary have of the English Perfect (as well as the adverbial phrase with before in (18.b)) suggest the relative anteriority of the time of the Event (ET) to some Reference Time (ET/RT), while the (absolute) tense marking of the English Perfect (here had) suggests that this RT is ordered anterior to ST, but in both sentences in (18), RT is unspecified.

As we have seen, however, an utterance such as (19.a) (=16.a) in Mandarin is also felt by many speakers to be semantically incomplete in isolation, or taken to be synonymous with the embedded clause in (19.b) (=16.b).

(19.a) Ta he le cha (.)

he drink le tea

"He drank some tea./Having drunk some tea, he..."

(b) Ta he le cha jiu zou le.

he drink le tea then leave le

"Having drunk some tea, he then left."

As we have noted, the function of the existential operator acting in conjunction with COME ABOUT in both the English and Chinese Perfect constructions is to indicate the relative tense relation of relative anteriority of the time of the Event (ET) to some axis in Reference Time (ET/RT). Because of the constraint that all syntactically 'independent' utterances in English must be marked for absolute tense (the relationship of RT to ST), therefore even if RT is not specified (as in the sentences in (18) above), there is still more temporal deixis information present in the English Perfect sentences than in the Chinese. As Chinese has no mechanism to specify the absolute ordering relation of RT to ST aside from

explicit specification by time adverbials, etc., therefore in discourse contexts in which such overt specification is omitted, RT may only be available from context. In isolation, however, (e.g., as an example in a text on linguistics or grammar), such sentences will appear to be semantically incomplete.

We may thus agree with C. Smith's conclusion of her discussion of sentences such as those in (18):

A nearby sentences can give an RT for sentences like this, and in fact such sentences cannot be fully interpreted except in a domain larger than a sentence. The semantic dependence of sentences like this has far-reaching implications for the question of how a grammar can best account for time specification. It can be shown that the information completing these incomplete sentences is just what can appear in matrix sentences for the corresponding complements [cf. (19.a and .9.b) - J.S.R.] Therefore the same principles are involved in relating syntactically and semantically dependent sentences to other sentences that establish RT. (1978:10-11)

Some linguists insist on discourse prerequisites for the analysis of sentences in text/context (see Longacre 1972; Grimes 1975; Halliday & Hassan 1976, as but a few recent examples). Linguists taking a formal approach to the study of syntax and semantics, however, are only at present going beyond the sentence, which Bloomfield, for example, defined as 'an independent form, not included in any larger (complex) linguistic form' (1933:170), and the characterization of which Chomsky enthroned as the goal of modern transformational-generative linguistics.

Future research on the Mandarin Perfect should investigate the conditions for the placement of Perfect le in postverbal vs. sentence final position in the light of the discourse context considerations just discussed. At this juncture, however, we are at the same point as was Smith in her recent paper, "How Context Contributes to the Interpretation of Temporal Expressions" in English.

The analysis of certain grammatically, i.e. [syntactically] impeccable sentences as [semantically] incomplete explicates the feeling of many scholars that there is something wrong about trying to interpret sentences in isolation. Apparently deixis of time and place, as well as the more familiar phenomena of anaphora, involves single sentences only as special and perhaps rather artificial cases. Many interesting questions remain, of course. One important question for future research is the characterization of "neighboring sentence". Are there constraints on how far apart such sentences may be? Do certain grammatical sentences facilitate or inhibit dependence? Are there other types of dependence besides the ones considered here? (Clearly there are.) More generally, the analysis given here suggests a way of dealing with texts, as having subunits with, e.g., one RT. [1977:11, but my additions, J.S.R.]

The investigation of the conditions for placement of surface *le* in the present paper similarly supports this view that context must be taken into account for any complete understanding of temporal specification in Mandarin Chinese.

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A STRUCTURAL ANALYSIS OF JURY DELIBERATIONS

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Over the last few years interactional analyses have been conducted using a variety of contexts. Typically these studies involve extensive analysis of an interactional sequence occurring in one context. This study focuses on verbal and nonverbal analyses of three interactive sequences which occurred in related but contrastive contexts. The analysis was done on both micro and macro levels. The micro level analysis focuses on the structural relationships of verbal to nonverbal aspects of the interactive event. On the macro level the semiotic functions of one subject were evaluated in contrastive contexts. Specifically we observed interactive events and the relationships of rhythmic structure to verbal interaction, gesture and intonation. Each phase of the analysis, i.e., gestural, intonational and rhythmic were done separately so that one analysis would not influence the other.

The contexts from which our interactive events were chosen can most easily be described as question and answer periods followed by group discussion. A group of 12 people were randomly selected from the jury pool in Detroit, Michigan. These people formed a mock jury and were presented with a simulated trial situation after which they were asked to deliberate as to a verdict on the case. The presentation of the case consisted of a prosecution witness telling his side of the story, a defendant telling his side of the story, a judge giving them corroborating evidence for both sides and then reading the law that was applicable to the case. After each presentation the jurors were encouraged to ask the witnesses questions about their stories. The entire sequence was videotaped. This videotape was then repeatedly analyzed at both slow and normal speeds.

For the purposes of this paper one juror was chosen for analysis. He was a 55-year old Black man who worked as a postal employee in Detroit. He was studied as he interacted with the prosecution witness, the defendant and during his discussions with other jurors.

Theoretical Background - In this study, paralanguage and gesture are viewed not as accompaniments to language or parallel structures or systems, but as integral and inseparable components of the interactive event. They are seen not as a separate system but as a level or plane of diacritics that modifies a verbal gestalt. In this sense the sign is altered by upsetting the equilibrium in terms of those elements in the initial acoustic image that are subject to modification. These mutable elements

(and those that are immutable) are present or potentially present in the speech event from the beginning so that we are not imposing another parallel system but either consciously or out of awareness deforming in initial gestalt. Initial is not meant here in a temporal or superordinate sense but only in an analytical sense. The change in meaning that results in this deformation does not imply that a separate system is operating but that the total sign is one object of cognition.

The properties of the plane of diacritics - tempo dynamics, timbre plus all of the adjectives available - reflect precisely Trager's categories of voice set, voice quality and vocalizations (1964). With the exception of vocalizations these categories indicate some modification of a verbal gestalt. Pitch tempo, voice quality, etc., are all obligatory components of the acoustic image so that what is significant in terms of paralinguistics is the distortion or variation of these elements. For example, overhigh or overflow pitch signals a change of the expected norm. The gradations possible from overhigh to overflow pitch form a continuum and in this respect differ from the relatively discrete supra-segmentals of pitch.

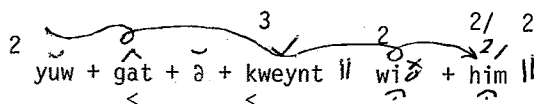
All of the elements that make up what is traditionally called paralinguistics are present and essential in the acoustic image. What is termed paralinguistics is an intensifying or de-generation of mutable elements.

Micro Analysis - Perhaps the most significant conclusion on the micro level is the maintenance of synchronic co-occurrence of gestural peaks, closure, preparatory gestures, etc., with the metrically rigid occurrence of verbal stresses. We found support for Kendon's claim that the process of speech and gestural utterances probably begin at the same time (1975).

"Phrases of gesticulation tend to appear a little in advance of their associated speech phrases and their preparation begins sometimes well in advance. This suggests that the process of speech utterance begin at one and the same time. The temporal priority of gesture may partly be due to the fact that for a given idea to be expressed in words it must be strung out in time, whereas the same idea may be expressed in gesture within a single movement or pose of the hand."

We also have observed preparatory gestures of the type Kendon refers to in our analysis but we do not attribute to them a priority of gesture or agree "that the process of gestural encoding is more readily accomplished than that of verbal encoding and so may be faster for this reason." Rather preparatory gestures are viewed by the authors as physically necessary movements timed so that the peak drop, sustention, etc., that follows will in the case of English, fall on rigidly prescribed prominent stress points. Preparatory gestures are analogous to the movements made by a conductor in providing cues for an orchestral performance. A down beat is always preceded by an upward swing of

the baton and an upbeat is always preceded by a downward preparatory gesture. Although gesture in normal discourse is not quite as deliberate, body parts must be brought into a preparatory position before direction is possible. Most often preparatory gestures anticipate the two prominent stresses within an intonation pattern. Gesture terminates at these points in time so that preparatory gestures always precede strong stresses. If a hand is not already extended for a drop or if the head is not in an appropriate position for a nod they are brought into position to coincide with the rhythmic beat provided by the syntactic stress patterning. For example when our subject says

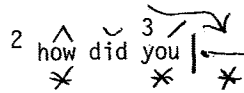


the preparation begins on *yuw* with both head and right hand rising on /yuw/ so that the bottom of his gestural looping configuration coincides with secondary stress on /gat/. Preparatory gesture is necessary for without it a sudden downward chop of the hand on /gat/ or sudden drop of the head on /kweynt/ would not be what we would expect in terms of gesture in the context of this utterance. The perceiver comes to the interactive event with a culturally determined set of expectations in terms of rhythm and tempo in both the arbitrary ordering of lexical and syntactic stress and synchronic gesture incorporated in one event.

There is one organizing principle for both language and gesture and that is rhythm. Rhythm in language is manifested on the surface level by duration and the variations of weak and strong syllable stress within isometric intonation patterns. Intonation patterns as described by Trager and Smith are bounded by major junctures and one and only one primary stress plus any number of other stresses. The perceptual reality of major junctures and the relatively short duration (rarely more than six syllables) has been attested to by naive listeners. Junctures and intonation patterns are perceptual units and not just the tool of the analyst.

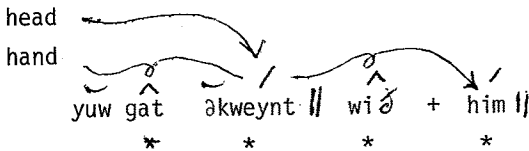
Tempo is not to be confused with duration which is a single occurrence; tempo has domain and extends over the whole or part of an utterance. It is the regular recurrence of an event in a fixed temporal relationship. In the case of English it is the temporally regular recurrence of prominent binary stresses within each intonation pattern. This is manifested on the surface level of rhythm. When the beat or prominent stress is not manifested on the surface level the perceiver will supply the mandatory marker. This can be shown by interrupting an utterance and tapping out the expected remainder. We found instances of this in our analysis.

For example, the subject interrupted himself on you



and supplied the mandatory beat gesturally in its appropriate time slot.

Rhythm is manifest in language but not in gesture because of the digital character of language and the analogic character of gesture. Gesture is not structured in sequential morphological units. Although it does not display rhythm it is in synchrony with the underlying binary organization of the verbal message. This means that peaks, points, closure, sweeps, etc., will reach terminal extension and be manifested in synchrony with the underlying beat. For example,



Kendon (1975) has cited Birdwhistell as reporting corresponding intonation and gestural vectors:

"There is also some reason for thinking that intonation tunes may have their parallel in kinesic organization. Thus Birdwhistell (1970) has reported that a lowering of a gesticulating body part co-occurs with a falling terminal juncture in speech and that where a gesticulating body part is sustained or held at the end of an utterance, the pitch of the voice is also either sustained or raised ... "

Several examples of our own corroborate the findings of Kendon and Birdwhistell but caution must be taken in posing a rigid one-to-one correspondence of intonation and gesture because we have found as many examples that violate this parallel. For example, we observed a woman making two false starts. On the third, while exhibiting overhigh pitch, she dropped and sustained her hand palm down as she repeated the utterance with a rising terminal juncture. Our subject also violated this principle at times.

Sustention of gesture seems to occur over single bar junctures which are never terminal (except when there is self-interruption or a false start). However, single bar junctures frame intonation patterns and in these instances tension is maintained in the flow of speech so that there is an awareness of the receiver that more speech is coming. Terminal junctures (double bar || and double cross #) indicate a disintegration of the flow

of speech in an upward or downward direction. Also, when they are terminal they mark closure. The signalling of closure by terminal junctures is often accompanied by gesture and is important in terms of turn-taking. This was observed in our analysis when the subject returned his extended hand to contact his thigh and when he cocked or tilted his head from a vertical position in concert with a rising double bar juncture.

Macro Analysis - On a macro level our analysis was aimed at identifying paralinguistic and gestural changes that could be indicators of meaning during the interaction sequences. We were specifically interested in any correspondence between our subject's interaction with the defense and prosecution and changes in paralinguistic and nonverbal structures. Since the last interactional sequence that was videotaped was of our subject discussing each of these two witnesses we used this data as a check on our assessment of his previous interactions.

On the macro level the frequency and spatial parameters of our subject's gesticulation, the occurrences of tempo changes and paralinguistic effects were found to vary in each of the contexts studied. These were for us a basis of judgement of his attitude or relationship in each interaction. Just as every speaker has a recognizable norm in terms of voice set and body set there seems to be a norm for tempo, frequency and distance or range of movement or gesticulation.

In terms of meaning we found that changes of tempo are symptomatic of affective states. Since rhythm cannot occur outside the context of the temporary upsetting of an established gestalt, tempo is an indicator of intention. Interruptions of tempo - slowing down, accelerating and lack of synchronic rhythmic gestures - all contribute to meaning. Our subject-defendant interaction reveals almost constant interruption by the subject. These interruptions seem to occur in the form of helping the defendant either finish or clarify his statements. On the other hand, the subject-prosecution interaction reveals no interruptions. In this instance there is no attempt on the part of the subject to help the interaction along.

Preparatory gestures in turn-taking such as initiating an interaction or interrupting one occur with or without vocalization. In the case of our subject, gaze and body movements were directed toward the defendant and later towards the co-deliberators but there was a noticeable lack of body movement or gaze directed toward the prosecution witness. There was also less variation in tempo and paralinguistic pitch in the subject-prosecution interaction than in the other contexts.

Lastly, the subject's frequency and range of movements during the subject-prosecution interaction were constrained relative to the other interactions. He was exceptionally 'quiet' nonverbally while interacting with the prosecution and his movements were constrained to a small space immediately in front of his torso. In the other contexts his movements were broad and extended not only in front but also laterally.

There is always a danger in ascribing meaning to behavior on a one-to-one basis but we feel that covert meaning can be determined by contrasting gestural and paralinguistic effects in varied contexts. In this study we determined that our subject was much more at ease and favorably inclined to the defendant than the prosecution. This was later confirmed when we viewed the deliberations and the subject argued sympathetically for the defendant's acquittal.

Conclusion

In conclusion we have shown that rhythm is the organizing principle for language, gesture, and paralanguage. Although gesture and paralanguage do not manifest rhythm, the co-occurrence of gestural peaks, sweeps, drops, etc., and paralinguistic changes of tempo with the rhythm of language indicates the interrelationship of these three systems. Furthermore, our analysis indicates that changes in these modalities may be viewed as indicators of affective and intentional meaning.

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IV

SOCIOLINGUISTICS

BABY TALK IN FRENCH AND QUEBECOIS

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First a word about what baby talk (henceforth BT) is not. It should not be confused with infant speech which refers to the utterances actually produced by the very young child in the process of acquiring language, and which are typically approximations of adult words. Nor should it be confounded with what has come to be called "motherese" (Cross, 1975, 1976; Vorster, 1975; Newport, 1976). What I prefer to call "caretakerese" to avoid charges of sexism, and because more and more fathers are looking after their children while their wives are out working¹, is the special register used by parents, adults in general, and even older children, when addressing infants. This register may — though does not necessarily — incorporate items of BT, and reflects "simplification" strategies, such as brevity of sentences, paucity of conjoined phrases, subordinate clauses or intercalated material, slower rate of speech, careful pronunciation, exaggerated intonation and redundancy with respect to situational context (Snow, 1972; Slobin, 1975; Bloom, 1978), but basically it is "correct" with respect to the adult standard grammar.²

BT, on the other hand, is a set of words and expressions used when speaking to infants, and in most cultures also to pets, and to lovers in intimate situations, particularly during courtship.³ Many of these words are not listed in dictionaries, though they are part of any native speaker's linguistic competence. BT items may be considered as a subset of the lexicon of a given language, used only in the appropriate situation, namely one of affection, tenderness and intimacy (Brown, 1977). Since they are used when addressing babies and infants, they are generally imbedded in sentences of caretakerese. Phonologically such sentences comprising BT items are characterized by even more greatly exaggerated intonation than is typical of caretakerese, with even higher ups and downs in prosody, and overall higher pitch.

There is an unfortunate tendency to lump together caretakerese and baby talk (cf. von Raffler-Engel and Lebrun, 1975; Snow and Ferguson, 1977), yet they are clearly distinct: Many of the French and Québécois mothers interviewed reported that they deliberately avoided the use of BT items when speaking to their children. They did nevertheless — probably unconsciously — adopt most of the characteristics of caretakerese as soon as they addressed them.⁴

BT items have been described in languages as varied as Arabic (Ferguson, 1956), Berber (Bynon, 1968, 1977), Brazilian Portuguese (Stoel Gammon, 1975), Cocopa (Crawford, 1970), Comanche (Casagrande, 1948), English (Ferguson, 1964), Gilyak (Austerlitz, 1956), Greek (Drachman, 1973), Hidasta (Voegelin, 1954), Luo (Blount, 1972), Maltese (Casar, 1957), Marathi (Kelkar, 1964), Nootka (Sapir, 1929), Pomo (Oswalt, 1976), Samoan (Blount, 1972) and Spanish (Ferguson, 1964). The following is a description of French and Québécois BT items as they are currently used in France and Québec respectively.

Standard adult French and Québécois share most of their vocabulary. Some words, however, are specifically French, others specifically Québécois (sometimes derived from Old French) and are mutually incomprehensible. Some words, though part of the French lexicon, are used more extensively or with a different meaning in Québécois. Pronunciation is markedly and systematically different, both in the realization of phonemes and in prosody.⁵

The same is true of BT items. About 60% of BT words are used both in France and in Québec, which means that 40% of the words are used in France and not understood in Québec, or used in Québec and not understood in France. Some BT items have different meanings in French and in Québécois. A French person hears with great surprise that "quenotte" means "hand" in Québécois, and a Québécois that it means "tooth" in France. The Québécois BT for "tooth" is "cric", a word unknown in France whereas the French BT "mimine" for hand is unknown in Québec. A French person could not even guess the meaning of "foufoune" or a Québécois that of "tonton".⁵

French and Québécois BT word structure follows what seems the general tendency across all languages (Ferguson, 1977) with a reduplicated CVCV canonical form (fig.1). The next and only other productive pattern is CVCV:C. This second class increases considerably if we include the items generated by the very productive morphological rule (AS) $C_1V_1:C_2 \rightarrow$ (BT) $C_1V_1C_1V_1:C_2$ (la balle $\rightarrow$ la baballe, la pomme $\rightarrow$ la popomme, la soupe $\rightarrow$ la sousoupe). Few words are longer than two syllables (un rototo from *rot* [ro] (burp)) or end with a consonant cluster (un nounours [nunurs] from *ours* (teddy bear)). Glides are sometimes deleted in consonant clusters as in [pa:ter] *parterre* (on the ground), [a:pü] *a plus* [apü] a reduction of "il n'y en a plus" (no more, all gone), or [pa:ti] *parti* (gone). Sometimes /s/ $\rightarrow$ /š/: [šebšša:ē] *c'est bon ça, hein?* [šebšša:ē] (that's good, isn't it?). Sometimes a word beginning with a vowel will start in BT with a consonant resulting from a faulty liaison (e.g. un, le zoizeau [zwazo] where the initial /z/ comes from the plural liaison, which is used in the absence of the proper context; la noreille [nɔre.j], les navions [nav.jɔ̃], using with singular definite articles (le, la) or in the plural (les, des) the /n/ of

(1) C₁V₁C₁V₁

bibi
 bobo
 kaka
 kiki (F,Q)
 koko
 kükü (F)
 kuku
 kyikyí (F)
 dada (F)
 didi (F)
 dodo
 fufu
 ʒuʒu (F)
 loló (F,Q)
 lulu
 lüü (Q)
 meme
 [fɛR] mimi (F)
 mömö
 nunu
 papa
 pepe
 pipi
 popo (F)
 pöpü (F)
 [fair] sisi (Q)
 ʃuʃu
 tata (F,Q)
 toto
 tutu (F,Q)
 tütü (F)
 tötö (F)
 wawa (F)
 zizi

(2) C₁V₁C₂V₂

bədɔ̃
 beta
 bizu (F)
 mine
 minu
 papo
 pətɔ̃
 ratɔ̃

(3) CVCVC

babun (Q)
 bebel (Q)
 kənɔt (F,Q)
 kənɛj (Q)
 kɔcɔt
 fufun (Q)
 gugun (Q)
 memɛR
 mənɔt
 mimin (F)
 mjamjam
 nanan (Q)
 pepɛR
 pupun (Q)
 tutun (Q)
 tütür (F)*
 zizik*

(4) (AS) C₁V₁C₂ → (BT) C₁V₁C₁V₁:C₂

baba:l
 bibi:d (F)
 bibi:z (F)
 bɔbɔ:s
 bɔbɔ:t
 bübü:l
 bubu:l
 dada:m
 fefe:s (F)
 fifi:j
 fɔfɔ:l
 papa:t
 pɔpɔ:m
 pöpü:s
 pupu:l
 susu:p
 süsü:k
 etc...

(5) Exclusively Québécois: CVCCVC

pɪtpɪt (Q)
 wufwuf (Q)

* formed after the CVC → CVCVC reduplication morphological rule applied to the last syllable of the word (*voiture* and *musique* respectively). F: exclusively French; Q: exclusively Québécois; F,Q: used in French and Québécois with different meaning.

Fig.1 French and Québécois BT word structure

the liaison only appropriate in the context of indefinite article "un" [ɛ] or [œ].

First name diminutives usually follow the CVCV pattern, often a reduplicated syllable, as in Dédé, Jojo, Gigi, Lili, Loulou, Lulu, Mimi, Toto, Riri, Vivi, but one finds also Catou, Michou, Bébert or Cricri.

BT words may have a gender different from that of the adult corresponding word from which it is derived or which it replaces: le pipi (m) comes from *la pisse* (f) or the less vulgar word *l'urine* (also f.); une bébelle (f) stands for *un jouet* (m), but most BT words do keep the same gender.

French and Québécois BT verbs are constructed with auxiliary *faire* ([fɛR] in French and [fair] in Québécois) followed by a BT word (fig.2).

fɛR + CVCV

fɛR	bibi (F)	embrasser	(to kiss)
	bobo	faire mal	(to hurt)
	kaka	déféquer	(to defecate)
	dodo	dormir	(to sleep)
	zuzu	jouer	(to play)
	mimi (F)	câliner	(to pet)
	pipi	pisser, uriner	(to urinate)
	pāpā (F)	battre, fesser	(to spank)
	ʀʀʀʀ	ronronner	(to purr)
	sisi (Q)	s'asseoir Q: s'assire	(to sit)
	tata (Q)	dire au revoir	(to say (wave) goodbye)

fɛR + CVCVC

fɛR	kukuʃ	se coucher	(to lie down)
	sisit (F)	s'asseoir	(to sit)
	mjamjam (F)	manger	(to eat)

fɛR + other forms of BT word

fɛR	rizet	sourire	(to smile)
	atʃum	éternuer	(to sneeze)
	giligili	chatouiller	(to tickle)
	menemene	se promener	(to go for a walk)
	aa (Q)	se balancer	(to swing)
	bum	tomber	(to fall)

Fig.2 BT verbs (faire + BT word)

Contrary to what seems a general tendency (Ferguson, 1977) there is no real productive diminutive or hypocoristic affix. The adult standard diminutive suffix *-et* (m) [ɛ], *-ette* (f) [ɛt] is not even used in BT (except when adult words are used in expressions of endearment). However, in Québécois *'ti* (a contraction of "petit") is extensively used, in particular before first names or nicknames (*'ti-Louis*, *'ti-cul*). There is no feminine counterpart.

The lexicon (fig.3), as could be expected, clusters around body parts, kin terms, names of animals. For other items in the child's environment the productive CVC → CVCVC morphological rule can be used. There are few BT endearment terms *per se*. Rather, animal names and their adult diminutives may be used in a number of conventional phrases.

BT kin terms exist only for father, mother, grandfather, grandmother, uncle and aunt (see list of kin terms). *Tonton* and *tata* are unknown to Quebecers who use instead an agglutination of the possessive adjective and the adult noun, which gives *le mononcle* [mɔnɔk(l)] and *la matante* [matāt]; a strategy also adopted in France as well with *la madame* [madam] and *le monsieur* [mɛsjø]. Since the latter is pronounced [mæ] and not [mɔ] *le monsieur* has even acceded to standard usage. In fact, in Québécois, many BT words have become standard, such as *bibitte* [bibɪt] (creepy-crawler); *bébelle* [bebɛl] has generalized to "gadget" in adult speech.

In contrast with what has been suggested as a universal characteristic of language use in interaction with babies (Moerk, 1972; Sacks, 1977), there are no nursery rhymes in French. The closest thing to a rhythmic routine would be one or two lullabies (*dodo*, *l'enfant do*)⁷ that are sung to put babies to sleep or to quieten them down.

As for the bogeyman which appears in many different cultures (Ferguson, 1977) it is "le bonhomme sept heures" in Québécois (literally "the seven o'clock man"). One folk etymology has it that it is derived from the English "bone setter" who used to travel through the country and whose activities would frighten children. The French "père fouettard" (whipping man) is more explicit. Neither may be considered BT items.

Ferguson (1964) has underscored the fact that BT is diachronically quite stable. Yet, as we have seen, up to 40% of BT may be mutually unintelligible between France and Québec, which have been living separate lives for no more than two hundred years. Thus it would seem that BT items are no more resistant to change over time than standard adult items. This may serve as additional evidence that BT is an integral part of the language, subjected in every respect to the same underlying systematic rules.

Animals

dada	[dada]	cheval	(horsie)
minou	[minu]	chat	(pussycat)
minet	[mine]		
toutou (F)	[tutu]		
pitou (Q)	[pitu]		
ouah ouah (F)	[wawa]	chien	(doggie)
wouf wouf (Q)	[wufwuf]		
cuicui (F)	[kwikwi]		
pitte-pitte (Q)	[pitpit]	oiseau	(birdie)
zoiseau	[zwazo]		
meumeu	[mömö]	vache	(moo - cow)
coincoin	[kwẽkwẽ]	canard	(duck)
cocotte	[kɔkɔt]	poule	(hen)

Kin terms

maman	[māmā] (F) [momẽ] (Q)	mère	(mummy)
papa	[papa]	père	(daddy)
pépé*	[pepe]		
pépère	[peper]	grand-père	(grandad)
mémé*	[meme]		
mémère	[memer]	grand-mère	(granny)
tonton (F)	[tɔ̃tɔ̃]		
mononcle (Q)	[mɔ̃nɔ̃k(l)]	oncle	(uncle)
tata (F)	[tata]		
matante (Q)	[matāt]	tante	(auntie)

* pépé (pépère) and mémé (mémère) may be used to differentiate the mother's parents from the father's parents, but though consistently for a given child/family, not systematically in the language (i.e. *pépé* does not mean father's father or mother's father in French BT. Each family may assign its specific use. However either means "grandfather" to everyone).

Body parts

mimine (F)	[mimin]		
menotte	[mənɔt]	main	(hand)
quenotte (F,Q)	[kənɔt]		
quenotte (F)	[kənɔt]	dent	(tooth)
cric (Q)	[krik]		
quenoel (Q)	[kənɛj]	oeil	(eye)
pattes	[pat]		
papattes	[papat]	main, jambe	(hand, leg)
peton	[pətɔ]	pied	(foot)
bedon	[bədɔ]	ventre	(belly)
didi (F)	[didi]	doigt	(finger)
cucul (F)	[kükü]		
tutu (F)	[tütü]	cul	(bottom)
oiseau	[wazo]		
zizi	[zizi]	pénis	(penis)
zizoune (Q)	[zizun]		
pelotte (Q)	[p(ə)lot]	vagin	(vagina)
nénez	[nene]	nez	(nose)
noreilles	[nɔREj]	oreilles	(ears)
kiki (F)	[kiki]	cou	(neck)
foufoune (Q)	[fufun]	fesse	(buttock)

Food

coco	[koko]	oeuf	(egg)
kiki (Q)	[kiki]	biscuit	(cookie)
lolo (F)	[lolo]	lait	(milk)
lolo (Q)	[lolo]	eau	(water)
laitlait (Q)	[lala]	lait	(milk)
nanane (Q)	[nanan]	friandises	(candy)
bonbon*	[bɔbɔ]	bonbon	(sweets)
miamiam (F)	[mjamjam]	c'est bon!	(yumyum!)
yumyum (Q)	[jamjam]		
bah!	[ba:]	c'est mauvais c'est sale	(bad (to eat), dirty)

* has been incorporated into adult standard

Fig.3 (II) BT lexicon

Endearment terms

mon	gros petit pauvre pauvre petit	canard (chou)chou lapin minet (F) minou (lou)loup rat(on) coco biquet poussin(et) pitou (Q) trésor	en chocolat en sucre en or
ma	grosse	(pu)puce poule(tte) cocotte biquette crotte biche(tte)	en chocolat en sucre en or

N.B. Those endearment terms may be used even by those persons who deliberately shun BT items. Very few in fact are actual BT words. The qualifiers which appear before and after the noun are optional. Masculine and feminine nouns may be used when addressing boys and girls indiscriminately.

Miscellaneous

joujou (F)	[zuzu]	jouet	(toy)
bébelle (Q)	[bebel]		
popot (F)	[popo]	pot	(potty)
'ti pot (Q)	[tipo]		
papeau	[papo]	chapeau	(hat)
baboune* (Q)	[babun]	moue	(pout)
gougoune* (Q)	[gugun]	sandale	(sandal)
poupoune (Q)	[pupun]	fillette	(little girl)
toutoune (Q)	[tutun]	(grosse) fille	(girl)
tutture (F)	[tütür]	voiture	(car)
toto	[toto]	auto	(car)

* has been incorporated into adult standard

Fig.3 (III) BT lexicon

Notes

- ¹ A legitimate distinction can be drawn between motherese and fatherese in a traditional situation where the father is in contact with the child only a very short time each day while the mother spends all day with the child (cf. Rondal, forthcoming). Differences may be due more to role and ensuing circumstances than to sex.
- ² Though some features may differ somewhat from standard usage among adults, such as the avoidance of first and second person pronouns (Becker-Makkai, 1978). Sentences nevertheless remain grammatical with respect to syntax, morphology, and lexicon.
- ³ Any differences between baby talk, pettесе and loverese may be ascribed to the topic of discourse, which in turn calls for a specific subset of BT items. Thus "le nonos" from *l'os* (the bone) is more likely to be used when addressing a doggie [ʃebɔ̃ʁa:ɛ:lənɔ̃s] whereas parts of the body may be prevalent in loverese: [akisɔ̃sebeɪpətiɲɔ̃ʁej ...esəbopətiɲene] possibly leading to [sebeɪfɛfɛs].
- ⁴ Over a period of three years sixty 15-minute conversations (often monologues) between French speaking Montreal mothers and their 18 to 30 month old child were recorded on tape and analyzed.
- ⁵ Not to speak of the numerous deletions which for instance lead the standard French sentence "c'est pour cela que je n'aime pas ça" [sepursəlakəʒnɛmpasa] to be pronounced [psampasa] (Santerre, 1977).
- ⁶ Some Quebeckers have become aware of French BT through French literature (and had to look them up in the dictionary). The reverse is not the case since until very recently Québécois was hardly written.
- ⁷ It is interesting to note that the rhyme "*t'auras du lolo*" which means "you will get milk" is understood as "you will get water" by Quebeckers, in spite of the fact that water would be an unusual reward to promise a baby.

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GENERALIZATION OF POUR AFTER VERBS OF MOTION IN ONTARIAN FRENCH

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Introduction

Traditional French grammarians (e.g. Grevisse 1975) generally recognize two types of infinitival complements to verbs of motion such as aller 'go', venir 'come', etc. in Modern French. One is the infinitive not introduced by a preposition, which we refer to as the bare infinitive (l'infinitif pur); the other is the infinitive introduced by the preposition pour 'for', or the POUR infinitive (l'infinitif prépositionnel) in this study. These constructions are illustrated in examples (1) and (2) respectively.

- (1) le plombier est venu réparer le robinet
'the plumber came and repaired the faucet'
- (2) le plombier est venu pour réparer le robinet
'the plumber came to repair the faucet'

The present paper examines a tendency in the French of young Franco-Ontarians to generalize the POUR infinitive at the expense of the bare infinitive and discusses several possible causes of this tendency.

Standard usage

Three aspects of the use of the infinitival complement to verbs of motion in Standard French are worth noting. First, as revealed in examples (1) and (2), the bare infinitive and POUR infinitive are not semantically equivalent. Whereas the bare infinitive signals a fact, or an action whose realization is presupposed, the POUR infinitive signals only purpose, or an action whose realization is not presupposed. This distinction is illustrated in (3) and (4) -- see also McArthur (1971:64) for discussion and examples.

- (3) *le plombier est venu réparer le robinet, mais il ne l'a pas réparé
'the plumber came and fixed the faucet, but he didn't fix it'
- (4) le plombier est venu pour réparer le robinet, mais il ne l'a pas réparé
'the plumber came to fix the faucet, but he didn't fix it'

Second, use of the bare infinitive seems inappropriate at the level of discourse in response to a question introduced by pourquoi 'why' (5) just as use of the POUR infinitive does in response to a question introduced by qu'est-ce que 'what' or a similar interrogative expression (6).

- (5) a. Pourquoi le plombier est-il venu?
'Why did the plumber come'
b.? Il est venu réparer le robinet
'He came and fixed the faucet'
c. Il est venu pour réparer le robinet
'He came to fix the faucet'
- (6) a. Qu'est-ce que le plombier a fait?
'What did the plumber do'
b.? Il est venu pour réparer le robinet
c. Il est venu réparer le robinet

Third, use of the POUR infinitive is nonstandard with the general, nondirectional verb of motion aller 'go' or its colloquial past tense variant avoir été unless such a verb is modified directly by a locational expression, as illustrated in (7) and (8).

- (7) a. Je suis allé/ai été dans un restaurant pour manger
'I went into a restaurant to eat'
b. J'y suis allé/ai été pour manger
*'I went there to eat'
- (8) *Je suis allé/ai été pour manger dans un restaurant

For further details on the infinitival complement to verbs of motion in Standard French, see Beniak, Mougeon, and Canale (1978) and references cited there.

Ontarian French data

We examined the use of the infinitival complement to verbs of motion in the spoken French of 90 bilingual (French/English) Franco-Ontarian students at the elementary and secondary levels. For purposes of comparison we also examined the spoken French of 28 monolingual students from Quebec City at the same grade levels. Both groups were fairly equally represented in terms of sex and socioeconomic background. All the data were gathered in taped semi-directed interviews of approximately 30 minutes duration designed to elicit informal speech on several specific topics. See Mougeon et al. (1978) for further details.

Table 1 presents our findings on the total number of bare infinitives and POUR infinitives used as complements to verbs of motion by the students in each group.² The POUR infinitive is used significantly more frequently ($\chi^2 = 25.16$; $p \leq .001$) by the Franco-Ontarian students than by the Quebec students. Given the high de-

	pure infinitive	POUR infinitive
Franco-Ontarians	329 (86.4%)	52 (13.6%)
Quebeckers	262 (97.8%)	6 (2.2%)

Table 1

gree of similarity of the interviews conducted with both groups, it is very unlikely that this difference in usage by the two groups is a product of the interview itself. Rather we hypothesize that the Franco-Ontarian students are generalizing the *POUR* infinitive to contexts where Standard French would require the bare infinitive.

In order to test this hypothesis, we examined the linguistic context of each of the 52 cases in which the Franco-Ontarian students used the *POUR* infinitive. We judged these cases in terms of the grammaticality and appropriateness of the *POUR* infinitive on the basis of the three aspects of Standard French usage noted above. We identified 24 ungrammatical (= nonstandard) uses in which a locative expression did not directly modify *aller* or *avoir été*; samples are given in (9).

- (9) a. *on a décidé aller pour se baigner
'we decided to go swimming'
b. *ma mère, elle a été pour voir ma cousine
'my mother, she went to see my cousin'

With respect to semantic and discourse properties of the *POUR* infinitive, ten of the remaining 28 cases were judged to be appropriate (10), ten inappropriate (11), and eight were left undecided due to insufficient data on the semantic and discourse contexts (12).

- (10) a. J'pas venu icitte pour manger des cheveux.
'I didn't come here to eat hair'
b. I' vont à la chasse pour tuer les animaux, pis i' les ont pas.
'They go hunting to kill animals, then they don't get any'
- (11) a. Interviewer: En fin de semaine, qu'est-ce que tu as fait?
'On the weekend, what did you do?'
Student : J't'allé à Val Caron pour voir ma grand-mère.
'I went to Val Caron to see my grandmother'
(appropriate response: je suis allé à Val Caron voir ma grand-mère)
b. Les orphelines étaient venues pour visiter les animaux, pis quand c'était le temps de repartir, elles voulaient pas.

'The orphan girls had come to visit the animals, and when it was time to leave they didn't want to'
 (Since the second conjoined clause in this sentence implies that the orphan girls did in fact see the animals, a more appropriate first clause would be: *les orphelines étaient venues visiter les animaux*).

(12) Y'a été à l'autre machine pour retirer la bombe.

'He went to the other machine {to take out
 {and took out} the bomb'

These findings suggest that the Franco-Ontarian students are using the POUR infinitive with verbs of motion in two ways: on the one hand as a signal of the purpose reading of the infinitival phrase (conforming to its usage in Standard French), and on the other hand as a semantically equivalent variant of the bare infinitive. It is as if these students were generalizing the structure but not the function of the POUR infinitive by using a semantically empty (i.e. nonpurposive) *pour* to introduce the bare infinitive. Thus as a result of this structural generalization, the POUR infinitive is often semantically ambiguous in our data between its purpose and nonpurpose readings -- see (12) above.

Causes of this generalization

Assuming the correctness of the analysis just presented, it remains to be established (i) why the bare infinitive might be giving way to another construction and (ii) why this other construction might be the POUR infinitive. For the reasons given below, we maintain that this generalization is a simplification of the syntax of infinitival complements to verbs of motion in French and that it is due to the combined influence of intrasystemic factors (i.e. internal properties of French), intersystemic factors (i.e. structural borrowing from English), and extralinguistic factors (i.e. the low level of exposure to Standard French in Ontario).

The bare infinitive complement is highly restricted in its usage in Standard French. It is found only after a small set of verbs, namely the verbs of motion, perception (e.g. *penser* 'think'), and the modals (e.g. *vouloir* 'want') -- cf. Grevisse (1975:748). The majority of verbs taking infinitival complements require the preposition *à* or *de* before the infinitival phrase. It is thus possible that the use of the POUR infinitive in contexts requiring the bare infinitive represents a tendency to regularize the predominant structural pattern verb + preposition + infinitival phrase. Although it is not fully clear to us why bare infinitive complements to verbs of motion should be affected before such complements to perception verbs and the modals, the fact that *pour* rather than *à* or *de* (or another preposition) is being used in Ontarian French to introduce a nonpurpose complement seems to be related to several factors.

First, *pour* may be used to introduce a nonpurpose infinitival complement to *aller* and *venir* to express the notion 'to be about to'. Examples such as those in (13) were found in our Franco-Ontarian and Quebec data.

- (13) a. I' r'cule pas quand i' vient *pour* se battre.
 'He doesn't back down when he's about to fight'
 b. Les deux madames traversent, i'vont *pour* traverser la rue
 'The two women cross, they're about to cross the street'

Second, in earlier studies of these students' spoken French (e.g. Mougeon and Carroll 1976) we isolated several innovative uses of *pour*, among them its substitution for *à* and *de* before an infinitival complement, when these latter two prepositions are semantically null, as in (14).

- (14) a. J' les invite *pour* venir se baigner
 'I'm inviting them to come swimming'
 b. Elle lui a demandé *pour* aller au magasin
 'She asked him to go to the store'

Finally, Aub-Buscher (1976) presents data that suggest a similar extension in the use of *pour* in the French-based creoles spoken in the Caribbean. In particular, she notes that *pour* is used frequently to introduce a nonpurpose infinitival complement while maintaining its purpose function in other contexts.

It is thus possible that a number of internal properties of French have played a role in the extension of the use of *pour* before nonpurpose infinitival complements. However, there is no reason to believe that the generalization of the *POUR* infinitive in our data is due to intrasystemic factors alone. Certain of these factors would, we assume, be relevant in Quebec French and Standard French as well, yet we find no evidence in our Quebec data nor know of any studies of Quebec French or Standard French suggesting a similar generalization in these varieties. We are thus led to believe that other factors, more or less unique to the Franco-Ontarian sociolinguistic setting, have contributed to the generalization of the *POUR* infinitive. Borrowing influence due to contact with English and the low degree of exposure to Standard French would seem to be two such factors.

Consider the first factor. In English the preposition 'to' serves as a sandhi form to introduce the infinitival complement of the majority of verbs. This infinitival complement may have a purpose or nonpurpose function when used with a verb of motion, as in (15).

- (15) a. I went there to study, not to eat (purpose)
 b. I went to eat at a Mexican restaurant last night and really enjoyed the food (nonpurpose)

Thus one might expect to find a higher occurrence of the nonstandard use of pour to introduce a nonpurpose infinitive among French speakers having a strong command of English (e.g. the Franco-Ontarian students) than among those having a weak command of English (e.g. the Quebec students). The contribution of borrowing influence from English to the generalization of the POUR infinitive becomes even more plausible when the French of a group of anglophones is examined. Spoken data from 15 Grade 2 and 15 Grade 5 anglophone students enrolled in French immersion programs in Montreal revealed that the POUR infinitive was used in 36/105 (34.3%) infinitival complements to verbs of motion, significantly higher ($p \leq .001$) than the frequency of use of the POUR infinitive reported in Table 1 for the Franco-Ontarian as well as Quebec students (cf. Beniak, Mougeon and Canale 1978). A quick check of the linguistic contexts in the immersion data revealed that most of the POUR infinitives were used when a bare infinitive was required.

Consider now the level of exposure of Franco-Ontarians to Standard French. We noted above that use of the bare infinitive is restricted to only a small set of verbs in Standard French and may, on these grounds, be considered somewhat of an 'exception'. As such, the use of the bare infinitive might be acquired later than use of the POUR infinitive or at least be acquired with less facility by a group of learners that is exposed infrequently to a variety of French that maintains this 'exception'.

In the Franco-Ontarian sociolinguistic setting, Standard French is generally little used or valued by students (cf. Mougeon, Canale and Bélanger 1978 for discussion). Thus the low level of exposure to Standard French usages such as the bare infinitive may contribute to the weakening of the bare infinitive and to the generalizing of the POUR infinitive (conforming to the more general pattern verb + preposition + infinitival phrase) we have detected among the Franco-Ontarian students.

Conclusion

We think that the data and findings we have reported in this paper are interesting for several reasons.

First, it has been claimed by certain historical linguists (e.g. Anttila 1972) that one of the major principles of language change is that of 'one meaning, one form: i.e. languages (or language learners) strive to avoid polysemous linguistic forms. However, the structural generalization that we have examined in Ontario French seems to be taking place in spite of the fact that it gives rise to semantic ambiguity of the POUR infinitive between its purpose and nonpurpose readings. The difference between Standard French and Ontario French with respect to the infinitival complement to verbs of motion can be illustrated as follows.

	<u>Standard French</u>		<u>Ontarian French</u>	
Syntax:	bare inf.	<i>POUR</i> inf.	bare inf.	<i>POUR</i> inf.
Semantics:	nonpurpose	purpose	nonpurpose	purpose

Thus to the extent that this generalization represents an innovation in Ontarian French (a point suggested, but not confirmed, by the Quebec data as well as by data from earlier French dialects discussed in Beniak, Mougeon, and Canale 1978 and Brunot 1966), then our findings are inconsistent with those that the principle 'one meaning, one form' would predict.

Second, much recent work in historical linguistics and second language learning has claimed to isolate single causes for various innovative linguistic developments rather than examine the possible interaction of different causal factors (cf. Canale 1978, Canale, Mougeon, and Beniak 1978 and Lightfoot in press for discussion). In the field of second language learning, this preoccupation with single causes has led to much debate on whether interference or overgeneralization is at the origin of certain second language errors (cf. Dulay and Burt 1974). In our own work on Ontarian French (e.g. Canale, Mougeon, Bélanger, and Ituen 1977, Canale, Mougeon, Bélanger, and Main 1977, Mougeon, Bélanger, Canale, and Ituen 1977) we have found that those nonstandard usages that are systematic and persistent tend to be attributable to an interaction of intrasystemic, intersystemic, and extralinguistic factors. In the context of the present study, it is certainly reasonable to conclude: (a) that the tendency to phase out the bare infinitive complement to verbs of motion was latent in Ontarian French, and (b) that the existence of related infinitive constructions in French, the borrowing influence of English, and the low level of exposure to Standard French have reinforced this latent tendency and have set into motion and directed the observed generalization. Evidence that there is at least a latent tendency in all French dialects to discard productive rules for forming the bare infinitive complement to verbs of motion is suggested by the history of this construction in the Romance languages: Italian, Portuguese, Romanian, and Spanish, for example, have all generalized the pattern verb of motion + preposition + infinitival phrase (with a cognate of French *à* introducing a nonpurpose infinitive and one of French *pour* introducing a purpose infinitive) -- cf. Beniak, Mougeon, and Canale 1978 for references and details).

Third, we have maintained that the exceptional character of the bare infinitive complement to verbs of motion may have contributed to the simplification process affecting the syntax of these verbs. In this light, it is worth noting that this class of verbs is also somewhat exceptional in its morphology (e.g. stem changes) and morphosyntax (e.g. auxiliary usage). Martinet (1969), Frei (1971), and Guiraud (1973), among others, have observed various tendencies to regularize the morphology of this set of verbs. In addition, Canale, Mougeon, and Bélanger (1978) and

Sankoff and Thibault (1977) have shown that there is a strong tendency to replace the use of the auxiliary être 'be' with that of avoir 'have' to form the composed tenses of the active voice with these verbs in varieties of Canadian French.

Finally, it is necessary to single out certain limitations of the present study. Given the small size of our comparative sample of Quebec French speakers we cannot rule out that a similar, although possibly weaker trend to overgeneralize the POUR infinitive after verbs of motion does not exist in Quebecois French. If this was the case it might indirectly add some strength to the intrasystemic explanations proposed above. However in the case of Ontarian French it would not rule out the added influence of inter-systemic and extralinguistic factors. Furthermore, we have not yet carried out a fine-grained quantitative analysis of the use of infinitival complements as a function of the age, socioeconomic affiliation, and language dominance of the students in our sample. Yet if our hypotheses concerning the interaction of intrasystemic, intersystemic, and extralinguistic factors in this generalization are valid, then interindividual differences in the degree of generalization of the POUR infinitive should surface and be quantifiable. We hope to carry out such detailed analyses and to collect data on use of these infinitival complements by adult speakers in the near future.

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PROSODIC ANALYSIS OF TWO VARIETIES OF BUFFALO ENGLISH

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Modern dialectologists are always searching for better methodological tools for identifying socially significant linguistic variation. One such means for isolating those language variables in a particular community which are indicative or "diagnostic" of particular social/psychological factors has been implemented in the Buffalo area (Carlock, 1978). This technique entails first defining the social factors affecting an area and then identifying the diagnostic variables attached to them.

Previous research has indicated that ethnic group membership is a major social factor operating in the Buffalo area.¹ Buffalo natives averred that they were able to identify the ethnic backgrounds of other Buffalonians from verbal stimuli alone. Attitude study tests using ethnic speech as stimuli substantiated this belief of Buffalonians in their ability to recognize one another's ethnic backgrounds. The stimuli included recorded speech taken from members of two of the most prominent (to Buffalonians²) of the ethnic groups in Buffalo--Italian and Polish. The speakers were all second and third generation American Buffalonians who were essentially monolingual in English.

Subjective reaction tests using the tapes as stimuli were subsequently administered to Buffalonians in order to elicit from them those variables or techniques they were employing in their recognition routines. The set of linguistic features obtained in this way may be considered diagnostic of ethnic group membership. The methodological tools used in these subjective reaction tests were relatively unsophisticated and the resultant set of identified variables few. These included

¹Wolfgang Wolck has directed research on the Buffalo speech community, resulting in, among other studies, a description of the social factors operating in the social composition of the greater Buffalo area, Cf. W. Wolck, "Community Profiles."

²This information is based on a series of in-depth interviews conducted in the Buffalo area.

phonological, grammatical, discourse and prosodic features. These last appeared to be relatively important in degree of diagnosticity as most Buffalonians indicated some prosodic features in describing their identification techniques. Some examples are "Polish speech is sing-songy", "Italians speak flat" or "Italians seem to emphasize their words very heavily." Further attempts at describing the actual features underlying these descriptions were not very successful.

The prosodic analysis project³ resulted in the formation of a technique that seemed capable of solving the problem of defining specific prosodic features in speech. The project also involved the development of a method for identifying patterns caused by the regular repetitions of those features. Such patterns are the rhythmic occurrences which appear in regular speech. Rhythm is defined here as encompassing those patterns formed by the repetition of various prosodic features perceived by the speakers of a language. These features include intonation, timing, stress, pauses, contour prominence, etc. Both prosodic variables and rhythmic patterns are subjectively determined by the reactions of community members to the speech flow. Only those features and patterns recognized by native English speakers are taken into account in this analysis.

A major strength of this technique lies in the fact that untrained respondents may be used as analyzers of the prosody and rhythm occurring in the speech. Those prosodic features intuitively observed and actually used by native speakers of a language in comprehending that language can be identified. The differences in prosody that Buffalo speakers recognized in the speech of the ethnic groups might be due to their perception of variable rhythmic patterns. By identifying the rhythmic differences among ethnic speech and the degree of perceptual obviousness of each, one might be able to isolate the prosodic features responsible and their degree of diagnosticity.

PROCEDURE

Taped speech of Buffalonians of Italian and Polish descent served as data for the project. The intuitions of native English speakers formed the basis for identifying prosodic features occurring in the data. Pages 5 and 6 consist of transcripts of the data. These have been edited to include mainly

³The prosodic analysis project was developed by Madeleine Mathiot in the spring of 1978 at SUNY/Buffalo. Other project members presenting papers in this conference are M. Mathiot, B. Palant and L. Watts.

those stretches of utterance referred to in the text. Complete transcripts and/or tapes of the speakers can be obtained on request.

The prosodic features indicated in the transcripts include interruptions in the speech flow, word stress, contour prominence, timing and intonation patterns. Two types of interruptions in the speech flow were recognized: those formed by actual silences, or pauses, and those not formed by silence but by other phenomena (these latter are referred to as breaks). Speech bounded by two pauses is referred to as a pause group and that bounded by breaks is a contour. Only two degrees of stress were perceptually recognized: major (primary/secondary) and minor (tertiary). Primary and secondary stresses were perceived as so similar in quality as to be difficult to distinguish. Certain stretches of utterance were often found to be much higher or louder than the speech preceding or following it. As this phenomenon often occurred within a single contour or along two consecutive contours, it is referred to as contour prominence.

ANALYSIS

Clearly repetitive patterns were heard in the data. Rhythm was indicated as occurring where native speakers perceived repetitive patterns in the speech. Prosodic features possibly responsible for the sensed presence of rhythm were isolated later. Two degrees of perceived rhythm have been indicated in the transcripts: by brackets (stronger degree of rhythm) and by parentheses (lesser degree of rhythm) and by lines connecting those stretches of utterance which are similar in rhythmic pattern.

The repetitive patterns were found to correlate with a number of prosodic features, including those mentioned above. However, the type and degree of importance these prosodic features played in forming rhythm differed between the Polish-American and Italian-American speech. Junctures, both pauses and breaks, seem to occur more often in Italian-American speech than Polish-American speech, and as a result, Italian-American contours are shorter (approximately three syllables to four in Polish-American speech). Italian-American pause groups are also shorter. Pitch on the other hand appears to be more important in the speech of Polish-Americans, with the pitch height range more extensive than that in Italian-American speech. Contour prominence in Polish-American is similarly more often due to heightened pitch than in Italian-American, in which contour prominence almost invariably involves intensified stress.

In the speech of both groups utterances must have similar stress patterns to be perceived as rhythmic. Pitch similarity is also an important variable contributing to rhythm. However, it is more important in Polish-American speech than Italian-American. No major degree of rhythm was heard in Polish-American speech unless similar pitch patterns existed, whereas there are such examples in Italian-American speech (#1 line 6, the first two lines are level, the last two are falling; lines 10-12, each line is lower than the one before; #2 lines 18 and 19, the pitch patterns are simply dissimilar). Contour length is a stronger determining factor of rhythm in Italian-American speech than in Polish-American. Unevenness of contour length does not so radically affect similarity in Polish-American speech (#2 lines 3 and 6, lesser rhythm results from the differences in utterance length). Italian-American speech reveals a tendency toward repetition of a number of short contours, whereas Polish-American Buffalonians more often repeat whole pause groups (Italian speaker #1 lines 6, 19 and 20; Italian speaker #2 lines 2, 6, 12/13 and 18/19, Polish speaker #1, lines 2, 3, 8 and 11).

Implementation of the method developed in this project with a native population could result in an interesting description of the diagnostic prosodics occurring in the speech of an area. The existence of possibly diagnostic prosodic features may be revealed in native speakers' awareness and indication of varying rhythmic patterns. The success of this method is borne out in the large degree of consensus of project members on the occurrence of rhythmic and prosodic phenomena occurring in the data under examination.

KEY

PAUSE //

BREAK { more evident /
less evident }

MAJOR STRESS /

MINOR STRESS \

CONTOUR PROMINENCE

{ STRESS _____
PITCH - - - - - }

LENGTHENING ^

RHYTHMIC SIMILARITIES

IN UTTERANCE

{ MORE RHYTHMIC [R_m] [R_m]
LESS RHYTHMIC (R_n) (R_n)

$$1 - \left[\text{The common cold} \right] R_1$$

2- // Is a (very) (frequent) //

3- Item
R2

4- // In our house //

5- [//My youngest daughter//] R₁

6- $\frac{1}{R_3} \frac{1}{R_3} \frac{1}{R_3} \frac{1}{R_3}$ [Always] [seems] [to have] [a cold]

9- //It is a//

10- Common joke R4

11- In the house / R₄

12- //About her problem// R₄

19- $\widehat{\text{Um}} \widehat{\text{until}} \widehat{(\text{the cough})} \widehat{(\text{at}} \widehat{\text{least})} \widehat{(\text{is gone})} \widehat{(\text{that some-}} \widehat{\text{times}} \widehat{(\text{appears})} \widehat{(\text{with a cold})}$

20- // There isn't ^{R₆} ~~always~~ ^{R₆} ~~a~~
cough ^{R₆} ~~with~~ ^{R₆} ~~a~~ cold //

23- //Uh/usually/within/^{R7}four days//

24- The cold ^{R7} is gone //

25- // (And the child can) // ^{R7}

1- //When I get a/cold)// R8

2- //It seems to settle right in
my sinuses//^{R8}

3- //I have uh//

4- $\overbrace{\text{Sinus}}^{R_q} \overbrace{\text{problem}}^{R_q}$

6- //But when I/have a/cold/it
seems/to settle/(mostly)/(in/
the sinus/(area/

12- //Because the pain//^{R11}

13- Gets so intense in my head

18- $\overbrace{\text{Mainly fits the}}^{R_{12}} \text{um}$

19- ^{R12} /Throat area/ that becomes
enflamed //

POLISH-AMERICAN SPEAKER #1

- 1- //About the cold/n^ow h^uh//
- 2- //I wish they/would find/a
cure for a cold// R₁₃
- 3- //Seems/anybody you talk to/
has a cold/n^owadays// R₁₃
- 4- //And I work/in a drugstore// R₁₄
- 5- //And I meet/lotta people// R₁₄
- 6- //And they do/have/colds// R₁₅ R₁₅ R₁₅
- 8- //So I wish/they would find
a cure for a cold// R₁₃
they find a cure for//
- 10- //Polio//
- 11- //And I wish/they would
find a cure// R₁₃

POLISH-AMERICAN SPEAKER #2

- 3- //We took movies/of the
monkeys// R₁₆ R₁₆
- 4- //Up/on the litte tree// R₁₆
- 5- //And we took/then in/to
see the little//
- 6- //Little animals/in the
children's zoo// R₁₆
- 7- //And they got/scared/skinny//
- 10- //So it was a// R₁₇
- 11- //Really a// R₁₇
- 12- //Lotta fun// R₁₇
- 13- //We've got it on taps/and
they're laughing/n^ow// R₁₈

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THE WENDS: A CASE STUDY OF ETHNIC VARIABLES
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0. Introduction. "Who Are the Wends?" is the title of a small leaflet written by Ron Lammert a few years ago for the Texas Wendish Heritage Society.¹ It is only one of a number of signs indicating a revival of ethnic consciousness among some of the so-called Wends of Texas. "Who are the Wends?" is also the question asked by many linguists, anthropologists, and folklorists when someone mentions that group. The language of the Texas Wends--now almost extinct--has received relatively little attention;² their kinship system and cultural traits have been ignored by American anthropologists; and the folklorist knows next to nothing about the traditions and customs of the Wends.³ There is no Wounded Knee in the history of the Texas Wends that could have brought them to the consciousness of the American people. In short, for most Americans--scholars and non-scholars alike--the Wends are a forgotten people. Their history is the history of ordinary men and women that at first seems little different from that of other pioneer immigrant groups.

And yet, those who have studied the Texas Wends agree that they constitute a distinct ethnic group with surprising cohesiveness.⁴ This is not to say that the Wends have refused to be assimilated into the American way of life; nevertheless, there is a strong sense of group identity and, apparently, a rather well defined socio-cultural stratification within the group based on what might be called degrees of "Wendishness."

In this paper we wish to discuss briefly some of the manifestations of Wendishness, which we will call ethnic variables. We begin with a short historical sketch. Next, we isolate the major variables which are invoked whenever someone says, "I am a Wend." Finally we discuss in greater detail one specific variable, viz., Wendish place names and surnames. We have chosen names for further explication because, in some sense, the names are an embodiment of what is meant by "Wendish" today. They have taken on near iconic proportions, so that their physical presence provides an almost sure guide for recognizing the physical boundaries of the Wendish communities.

1. Historical Sketch. The core colony of around 500 Wends arrived in December, 1854, in Galveston, Texas, under the leadership of their pastor, the Rev. Johann Kilian. Before leaving Germany they had organized themselves into a separate and autonomous Lutheran congregation. Their European homeland was a rather loosely defined territory in South-Eastern Germany, west of Poland and north of Czechoslovakia, known as Lusatia (Germ.

Lausitz). Actually, the Lusatia of the 19th century consisted of two separate administrative units: a Southern part, known as Upper Lusatia, and a northern part, known as Lower Lusatia. Germans and Wends had been living side by side for centuries in this area although the Wends had never had political independence from their German neighbors. The Wends never considered themselves Germans; they were set apart historically by language, religion, and customs from the Germans, who treated this foreign Sorbian group in their midst as a despised minority. Even when they worked side by side as common laborers in the fields, the Wends were not paid as much as their German countrymen.

The motives behind the Wendish migration are relatively clear; they include the desire for religious freedom, the promise of better economic conditions, and the will to preserve and use the Wendish language whenever they desired. However, twentieth century scholars do not agree as to the relative importance of the three factors. For instance, Engerrand (1934) declares dogmatically, "The origin of the emigration of a large group of Wends to Texas in 1854 is to be found in a desire for religious freedom; social and political upheavals of the preceding years had very little to do with it." (p. 89) Nielsen (1977), on the other hand, insists that "religious motivation gives us insight into the Wends' way of life, but it does not provide us with the simple answer for migration.... Possibly the economic and religious motives blended...." (pp. 63-64) Yet all scholars agree that the Lutheran church was then and still is a powerful force in the life of the Texas Wends.⁵ Without the church's stabilizing influence, the Wendish community would hardly have preserved its ethnic identity until today.

The original settlement of the Wends was established at Serbin, in what is today Lee County, and is still the heart of Wendish country. Soon after they arrived in Lee County in 1855, the Wends constructed a two-roomed log building which was used as a combination personage, school, and church. As time and resources permitted, they built other structures in which to worship, and in 1871 the the present edifice, St. Paul Lutheran Church, was dedicated. This church has historical significance which extends far beyond the Wends because it is the first Missouri Synod Lutheran Church founded in Texas.⁶ Serbin and its church are recognized by all Texas Wends as the spiritual homeplace of their ethnic group, and attendance at the annual summer picnic or homecoming sometimes numbers into the thousands, as those have moved away come back to visit family and friends.

From Serbin, the Wends began to disperse throughout Lee County, Fayette County, and Williamson County and later into more remote parts of Texas. The primary reason for this dispersal was the need for more fertile and productive farmland to support the large families to which the Wends were prone. Others went to urban areas such as Houston and Austin because they could find good jobs there. As a result, even though Serbin is still the focus of Wendish attention, Wends can be found throughout the state and the country as a whole.⁷

As indicated earlier, there has been a noticeable revival of Wendish consciousness in recent years, especially among the descendants of the Serbinites who have moved away and are trying to re-establish contact with their past. Those Wends who live in Serbin and vicinity appear to be less interested in these developments, however, than those who have moved away. In 1971, the Wendish Culture Club was formed so that the Wends could participate as a group in the Texas Folklife Festival of the Institute of Texas Cultures in San Antonio, an offshoot of the Hemisfair in 1968. This club has since expanded considerably and has been renamed the Texas Wendish Heritage Society. It has approximately 200 members. The society holds regular meetings, often at the old schoolhouse in Serbin, and members come from as far away as Houston and Austin to enjoy the cultural programs and fellowship. Members who live too far away to attend meetings are kept in touch by a newsletter.

The society participates actively in various state and local activities: it has a booth at the Folklife Festival where members dress up in costumes and sell traditional foods such as home-made noodles; it has compiled a Wendish cookbook which is now in its third printing; it has constructed a replica of the Ben Nevis, the ship on which the original Wends came to Texas, and enters it as a float in different local parades in the area, such as the Watermelon Festival in McDade. During the past few years, the society has had the goal of trying to establish a Wendish museum. Some members are actively engaged in compiling genealogies⁸ and, as was mentioned at the opening of this paper, one of the members even wrote a brief informative leaflet which is passed out free at the Folklife Festival.

2. Ethnic Variables: When we began to study the Texas Wends a few years ago, we were quite optimistic about finding a rich folk tradition. After all, the Wends have constituted a fairly homogeneous group ever since they settled in Texas. Yet our fieldwork soon revealed that the Wends today have preserved very little folklore in the conventional sense, such as folktales and folksongs.

However, this lack is not surprising when we consider the harsh and alien frontier conditions to which the Wends had to adapt in order to survive in Texas.⁹ They settled on practically virgin land which had to be cleared of rocks and trees before a crop could be put in; their first homes were mere log huts and dugouts; the weather seemed almost unbearably hot and dry compared to their homeland; and the food and water supplies were scant and unhealthy. Accounts of these hardships as well as the rigors of the passage on the Ben Nevis apparently replaced the traditional narratives they may have known in Europe. Furthermore, nearly 125 years have passed since these settlers came to America. During that time the Wends were practically absorbed by the neighboring Germans and also had almost daily contact with English-speaking "Americans." As a result, the Wendish language is no longer spoken and many traditions have died with it. Furthermore, the Wends were neither as isolated or as numerous as

some other distinctive ethnic groups in America which have preserved a rich store of tradition, such as the so-called Pennsylvania Dutch or the Cajuns of Louisiana.

The more we studied the contemporary Wends, the more we realized that there was something wrong with our approach. Our problem was in some sense comparable to that experienced by the early American linguists and philologists, who realized that their traditional language categories did not work very well for descriptions of Amerind languages. Their dilemma resulted in the well known structuralist premise that every language has its own unique grammatical structure, which the linguist must somehow discover. With this view came a shift from a predominantly diachronic to a more synchronic orientation of language description.

In the same way, we realized that the conventional folklore categories did not work well for the contemporary Wendish community. And since the Wendish language is practically extinct in Texas, traditional linguistic documentation and analysis were not fruitful either. So we decided instead to take a different approach to the problem by focusing again on the original question which started us on the project in the first place: "Who are the Wends?" We set out to determine how the Wends today identify themselves as distinct from other ethnic groups in the vicinity.¹⁰ If we wanted to establish what it meant to be "Wendish," we would have to abandon the largely diachronic approach taken by all the other major studies of the Wends and analyze the Wendish ethnic traditions synchronically. It may, of course, be true that a Wend is someone who can trace his lineage back to the Slavic people of Lusatia and who has preserved certain characteristic customs and traditions as well as the native language from the European homeland. This is essentially what all four major studies of the Texas Wends assume. But to determine what this current generation of Wends understands by the term "Wendish" we must identify those synchronic factors that contribute to the group's ethnicity; and that is first of all an empirical question.

We have thus far isolated the following seven variables that seem to establish different degrees of "Wendishness" and that together define the ethnic label "Wend":

- (1) language
- (2) religion
- (3) family and community ties
- (4) genealogical proximity to the Ben Nevis
- (5) present geographical distribution
- (6) existing artifacts and customs
- (7) names

To clarify our concept a little better, we will now briefly explain each of these seven variables and then turn to the last one, names, in more detail to show what information we have derived from it.

2.1. Language. One reason the Wends left Germany was to find a place where they could speak their native language without interference from or suppression by the authorities. However,

most of those who came to America already spoke German as well as Wendish, and they had to use German in their new settlement to communicate with their already-established German neighbors. The widespread use of Wendish faltered as a new generation of Wends grew to maturity, causing a split in the congregation which ultimately resulted in the founding of a small splinter church, St. Peter's. Wendish language instruction ceased at the Serbin school in 1920 and the last Wendish sermon was preached at the 75th anniversary celebration in 1929. Today, in 1978, only isolated older speakers of the language remain, and random individuals can recite memorized verses, ritual greetings, or can count in the language. There is no one left from whom non-speakers can learn the language but this is not a concern to the people because nobody seems interested in trying to learn it anyway. Even the members of the Texas Wendish Heritage Society show only sporadic interest in the language.

But those who still know some Wendish occupy a special status in the rural communities, and who they are is common knowledge. They are the ones to whom fieldworkers seeking information about the Wends are referred. Locally, they are regarded as the custodians of what is left of the old ways and the people say that when they are dead all their knowledge will die with them.

The majority of Wends over fifty years old in the Lee/Fayette County area still speak some German and German services are held regularly at the Lutheran churches, in spite of the negativism toward the language generated by the world wars. However, there is a wide-spread local concern that the German language is dying out just as the Wendish has done. English is the dominant language today, even for those individuals who grew up speaking German or Wendish.

2.2. Religion. The Wends are Missouri Synod Lutheran, the most conservative branch of that denomination. Pastor Kilian joined the synod in 1855 and even travelled to St. Louis for a national meeting. The church has been the center of community life from the very beginning when the colonists organized themselves into a separate congregation in order to emigrate. The church remains as a unifying force today, and many small communities (such as Loebau or The Grove, and even Serbin) consist of a church, a cluster of houses, and perhaps a small general store. However, the churches do not take an active role in attempting to preserve what is left of the Wendish heritage; instead they focus their attention on maintaining an active meaningful religious life for the community. The fact that most of the members of the congregations have Wendish surnames and can trace their families back to the Ben Nevis is a secondary concern.

2.3. Family and Community ties. Family reunions and the homecoming picnics at Serbin, Warda, and Winchester dominate the social life of many Wends in the summer. In fact, these get-togethers constitute an integral part of the traditions of the Wends today. Those who have moved away use these occasions to come back to the old homeplace to renew past acquaintances and refresh fading memories. Children often learn of their heritage

by listening to their elders talk about old times, and in many cases young adults in their late twenties and early thirties have taken on the responsibility of organizing these events. German is freely spoken and one occasionally even hears some Wendish phrases. So the reunions and picnics span the gap between generations and help the younger ones keep in touch with and learn about an otherwise forgotten past. The reunions are also largely responsible for the increasing interest in compiling genealogies. In fact, most families elect an official archivist or historian to keep track of births, deaths, and marriages, who then inevitably becomes the recipient of miscellaneous photographs, documents, letters, etc. The genealogies are usually financed by advance subscription and are privately published.

2.4. Genealogical proximity to the Ben Nevis. Not all of those who call themselves Wends today can trace their families directly back to the Ben Nevis colonists. About thirty-five Wends were shipwrecked in Cuba and finally found their way to Texas the year before the Ben Nevis sailed and others came to Texas off and on up until about the turn of the century. Nevertheless, the Wends have intermarried so much that practically all of them can claim kinship to someone who was related to someone who came on the Ben Nevis. But the Wends as a group are so closely identified with the ship anyway that many of them do not even know that some Wendish immigrants came to Texas and elsewhere both before and after this core colony.

Among the Wends the Ben Nevis has achieved the status of a cultural icon. A painting of the ship hangs in the vestibule of St. Paul's church in Serbin and a stylized drawing of it forms the logo and letterhead of the Texas Wendish Heritage Society. The Society also sells 8 x 10 photocopies for 50¢ apiece of a drawing of the ship which appeared in the Illustrated London News on September 4, 1852, and club members proudly display these framed pictures in their homes. As was mentioned earlier, the Society also built a fiberglass replica of the ship, complete with small sails which have to be hand-rigged, which they enter as a float in local parades.

2.5. Present geographical distribution. Serbin is the undeniable heart of Wendish country and the people who live and attend church in that community are in day-to-day contact with the historical link to the Wendish heritage in America. Whether they are conscious of this daily association or merely take it for granted is, of course, another question, since most Serbinites, even the older generation, are pragmatic and present-oriented; a sense of history has never been their dominant concern. The drought and the falling beef prices of the summer of 1978 are much more on their minds than the possibility that the Wendish language will become extinct within the next ten years. Nevertheless, there are constant reminders of the rich heritage of which they are a part: the trickle of tourists who take photographs of the church and wander through the cemetery, the influx of friends and outsiders who come for the Serbin Picnic on Memorial Day, and even the presence of houses in which one or two inner rooms are still

built of log.

The degree of Wendishness ascribed to other communities reflects their historical development. Warda, Fedor, and Manheim are claimed by the Wends today because they were either founded by early Wends or have large Wendish populations. The Wends fanned out north and east from Serbin and by the turn of the century were settled in groups as far away as Vernon and Copperas Cove.¹² But the farther one moves from the core area, the more diluted the correlation between geographical location and Wendishness becomes. Even those Wends who live in the cities along the Gulf Coast and in Austin feel an affinity for the Lee/Fayette County area, and most return there to visit whenever they can. Many express the desire to be buried at the cemetery in Serbin, even though they never lived there.

2.6. Existing artifacts and customs. As was pointed out above, the distinctive folklore of the Wends is difficult to assess. However, careful fieldwork has revealed more traditional activity than was at first believed to exist. Although the Märchen of Europe are no longer told, there is a rich store of supernatural legends and personal experience anecdotes dating back to the Civil War. Although informants profess little or no belief in the legends they heard from older generations, there is considerable uneasiness among some whenever the Seventh Book of Moses, the infamous German hex book, is mentioned. They obviously know about the book and its alledged properties, but no one will admit to actually having seen one.

Even though antique dealers and museum curators have foraged in the area repeatedly over the years, many families have kept heirlooms from the pioneer past. Because of the owners' general reticence, these remaining artifacts have not been fully catalogued; but a surprising number of them must still be in the vicinity. Books printed in Wendish are rare and are generally treasured, even if their owners cannot read them. Wedding portraits in which the bride wears the black wedding dress, a custom brought over from Europe but dropped by the turn of the century, are quite common. Most Wends who have these relics keep them as tokens of beloved ancestors and not as symbols of the Old Country to be passed on from generation to generation.

Distinctive European customs have faded out in Texas, but many remnants of the pioneer phase remain. Beef clubs, whose members take turns slaughtering a beef and sharing it, have been maintained since before the Civil War. Communal fish fries are a favorite social gathering in the summer, as they have been from the beginning of the colony at Serbin. And family reunions and community homecomings are, of course, the primary contemporary traditions. When pressed for information, older informants will reminisce about customs they either practiced as children or heard others tell of; but these are not regarded as having any particular significance today.

2.7. Names. One feature appears to delineate the Wendish presence among the surrounding Czechs and Germans better than any other: the physical existence of Wendish names. There are first

of all the place names of the key settlement communities. Secondly, the surnames of the people embellishing various landscape artifacts and public documents also constitute a clue to the presence of concentrations of Wends in a given locale. In short, the mere existence of Wendish names in a given area is perhaps the most easily recognizable delineator of the extent and degrees of Wendish ethnicity.

We will begin with a discussion of place names since they reflect the shift from a diachronic basis of ethnicity to a more synchronic orientation rather well. Within the core area there are three place names in particular that have recognizable Wendish etymologies: Serbin, Warda, and Loebau. All three places were established and named by the early German and Wendish immigrants and are located within a twelve-mile radius of Giddings, Texas, the present county seat of Lee County. Other names in this core area are less distinctively Wendish. Thorn-dale, Manheim, Fedor, Copperas Cove, Lincoln, Lexington, and Winchester, to cite only a few, give no etymological clue to the outsider that they have large Wendish populations. Yet etymology, while still important, is not the only clue to the Wendish presence. The Wends today designate key communities within the nuclear region by a more synchronic system. They look less to the etymology of the place names than they rely on their tacit knowledge of who lives where when identifying predominantly Wendish communities.

Yet while the ethnic consciousness among the Wends is very much a synchronic fact, its diachronic basis has by no means been lost. Rather, a more accurate description would be that the synchronic system has been superimposed over the diachronic one. This explains why there is a recognizable gradation among so-called Wendish communities: some places are more Wendish than others. For instance, the Wendish place name par excellence is Serbin, followed closely by Warda and Loebau, and eventually by the other Wendish settlements, whose names usually have either German, Czech, or English etymologies. These facts may be graphically represented as in Figure 1.

As our diagram illustrates, Serbin is that place name in which the synchronic and the diachronic systems intersect most fully. Earlier we saw that Serbin is the focal point as far as the other ethnic variables are concerned. For example, St. Paul Lutheran Church, the Mother Church of the Texas Wends, is located at Serbin. And since Serbin is the original Wendish settlement, emotional ties with the community are very strong, even among those Wends whose ancestors moved away from there several decades ago. Finally, because so many families have held continuous ownership of farms in the area, the concentration of culturally significant artifacts and knowledgeable informants is greatest around Serbin.

But Serbin is also the one name in which the Wendish etymology and hence the diachronic link is most apparent. The name basically means the "Sorbian place." When the Wends first came to Lee County in 1855 they called their settlement by

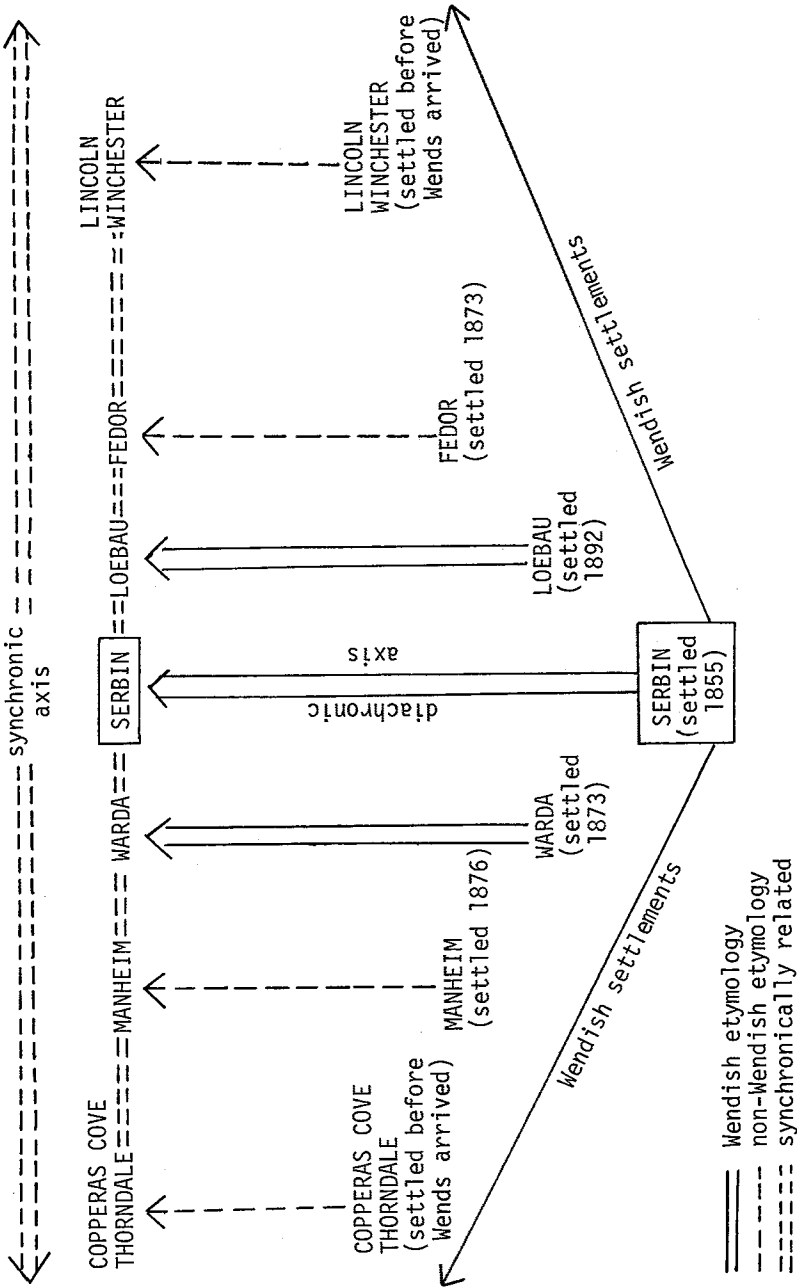


Figure 1

several different names; among these were Low Pinoak Settlement, Wend Colony of Rabbs Creek, and Rabbsville.¹³ They did not name the community Serbin until 1860, when the U.S. government installed a post office there. Although the post office has ceased to exist, as has the town itself, the name Serbin remains a constant reminder of the Wendish heritage.

Considering his university education and influence with the congregation, it is probable that Pastor Kilian coined the name Serbin. Yet it is not entirely clear why the Sorb/Serb root was chosen when the people generally used Wend as the designation for their language and ethnic group.¹⁴

The other two place names which help relate the diachronic and synchronic systems are Warda and Loebau. Although their etymologies are much less apparent than is that of Serbin, many Wends, nevertheless, associate those names with Wendish. Actually Warda was named after Wartha, a town north of Bautzen in Upper Lusatia, from which some of the Texas settlers originally emigrated. Similarly, Loebau was named after the Upper Lusatian town Löbau. No etymological connection can be claimed for the other "Wendish" communities, which are, nevertheless, an integral part of the synchronic system sketched in Figure 1.

To an outsider, communities such as Fedor; Lincoln, Dime Box, Winchester, Thorndale, and The Grove at first have no apparent connection with the Wends. Yet Wendish surnames provide the link which joins all of these communities (and even larger towns such as Giddings and LaGrange) into the geographic unit which can be loosely regarded as "Wendish country." By plotting on a map the physical evidence of Wendish surnames embellishing various landscape artifacts throughout the region, the researcher can determine more intricate spatial distributions of the Wends within the general region. Rural mailboxes, storefronts, tombstones, and public documents bearing Wendish surnames all help to define the Wendish presence on a more personal level.

Surnames have a more practical purpose as well. Family reunions and genealogical research are structured around them, and one of the primary topics of conversation whenever Wends meet is piecing together who is kin to whom. And, of course, the primary way for an outsider to recognize most Wends is by their surnames.

Many Wends today take great pride in being able to trace their lineage back to the colonists who came to Texas on the Ben Nevis. Although the passenger list does not exhaust the roll of Wendish names, it is the logical place to begin when compiling a list of Wendish surnames in Texas.¹⁵ However, there are a number of complications. Not all of the names listed have a Wendish etymology. Thus the etymology of a name, even where it can be established, is not a reliable indicator that its bearer is or is not a Wend. Moreover, the spellings of surnames vary widely today, complicating matters still further. Finally, surnames claimed by the Wends are also difficult to categorize because in Germany many names in the Wendish language were replaced by German equivalents for census and military rolls.

The example of such name changing cited most often by informants in Warda and Serbin is Schmidt. The European ancestors of the Wends who bear this name today were Kowar, which means "blacksmith." The ancestor of the Lee County Schmidts was Johann Kowar of Kringelsdorf, Prussia, whose name was changed to Schmidt when he joined the Prussian army. Johann, his son George, and daughter Anna emigrated to Texas in 1869. Anecdotes about Johann are widespread and garbled among his descendants today, but most agree that Johann was interchangeably called both Hans Kowar and Johann Schmidt. All other members of his family exclusively used Schmidt. There are no Wends today known by the surname of Kowar, but one branch of the Schmidt family anglicized their name to Smith, so that all three languages--Wendish, German and English--are represented in this one extended family.

The names themselves have also left behind a physical record of the Wendish presence, which is quite useful to the researcher but generally taken for granted by the Wends themselves. For example, the cemetery at Serbin contains an almost complete inventory of Wendish names on the tombstones.¹⁶ Furthermore, the Lutheran cemeteries at Winchester and Fedor are filled with grave markers bearing Wendish names. The 19th century markers are also stylistically quite different from more recent markers, which presents still another clue to deciphering the past. Such evidence enables the researcher to recognize which communities are populated by Wends. Another way to trace the wider outward migration of the Wends is to check the names and dates on the tombstones in the Lutheran cemeteries throughout central Texas and beyond.

But the names of the living are just as evident as those of the dead. The names on the mailboxes throughout this rural area are obvious markers of the Wendish presence.¹⁷ Names painted on storefronts throughout the area also designate contemporary Wendish ownership. And then there are the public documents which help the researcher recognize Wendish population concentrations. Wendish names in the telephone directories, especially of the rural telephone exchanges, are invaluable for locating the Wends and dealing with kinship connections, as are the various local newspapers. Giddings at one time had the only tri-lingual newspaper in Texas, the Deutsches Volksblatt.¹⁸ This paper, which ceased publication in 1943, regularly published articles in German, Wendish, and English. Today the Giddings Times and News and the Fayette County Record (LaGrange) are the local papers serving the Wendish communities, and Wendish names, of course, dominate the news from Serbin, Warda, Winchester, and neighboring communities. The various weekly church bulletins, newsletters, and related publicity are still another means for noting where Wendish names, and hence Wendish people, predominate. Together the various physical manifestations of the surnames establish the approximate boundaries of what we have earlier referred to as "Wendish country."

Conclusion. The preservation of Sorbian linguistic forms in place names and surnames reflects the existence of a

diachronically defined ethnicity among the Texas Wends. All four major studies on the Wends have emphasized this diachronic basis. But Wendish is also, if not primarily, a synchronically sustained ethnicity, which manifests itself in more subtle modes--our ethnic variables--that may or may not be tied to historical roots. This duality, we believe, explains an apparent paradox: the Wends have had no difficulties assimilating with neighboring groups, especially the Germans, thereby enhancing their outward and upward mobility. Among the Wends today one finds physicians, lawyers, college professors, and successful urban businessmen co-existing with Wendish farmers and their wives who till lands which have been in the family for over a century. Yet despite such cultural adaptation, the group as a whole maintains its ethnic integrity in a very stable and cohesive way. The Wends today still regard themselves as a distinct and separate group within the broader society. Whether they have joined the Texas Wendish Heritage Society in order to get back to their roots or have remained in the Serbin area and thus have never left their roots--they are all the Wends of Texas.¹⁹

Footnotes

¹Information in this leaflet is based primarily on Anne Blasig. 1954. The Wends of Texas. San Antonio, The Naylor Company. It also contains a form for joining the society.

²The studies of Texas Wendish in English have been conducted primarily by linguists from the University of Texas at Austin. Among their results are: Jan Perkowski. 1970. "A Survey of the West Slavic Immigrant Languages in Texas." Texas Studies in Bilingualism, Glenn G. Gilbert, ed. Berlin, Walter de Gruyter, pp. 163-69; Charles M. Wukasch. 1964 "The Verb in the Upper Sorbian Language of Texas." MA Thesis, University of Texas at Austin; and John Shaw, "The Wendish Language as Written in Texas." Ph.D. dissertation in progress, University of Texas at Austin. Other studies include: Reinhold Olesch. 1970. "The West Slavic Languages in Texas with Special Regard to Sorbian in Serbin, Lee County." Texas Studies in Bilingualism, op. cit., pp. 151-162; and Anthony L. Vaněk. 1967. "The Hierarchy of Dominance Configuration in Trilingualism." Lětopis A 14/2 Bautzen. The Wendish Institute in Bautzen, D.D.R., has the most complete archive of Wendish language materials in the world.

³The only published article dealing with Wendish folklore among the Texas colonists is: George R. Nielsen. 1961. "Folklore of the German-Wends in Texas." Publications of the Texas Folklore Society 30.244-259. [Abridged and reprinted as "Folklore of the Wends." PTFS (1974) 38.295-300.] See also Chapter 5, "Wendish Folkways," in George R. Nielsen. 1977. In Search of a Home: The Wends (Sorbs) on the Australian and Texas Frontier. (Birmingham Slavonic Monographs #1) University of Birmingham, Department of Russian Language and Literature, pp. 106-14.

⁴There are four primary books which anyone dealing with the Texas Wends must consult; chronologically they are: George C. Engerrand. 1934. The So-Called Wends of Germany and Their Colonies in Texas and Australia. The University of Texas Bulletin #3417. (Reprinted by R and E Research Associates, San Francisco, 1972); Anne Blasig. The Wends of Texas, op. cit.; Lillie Moerbe Caldwell. 1961. Texas Wends: Their First Half Century. Salado, Texas, Privately Published; and George R. Nielsen. 1977. In Search of a Home: The Wends (Sorbs) on the Australian and Texas Frontier, op. cit.

⁵The most extensive study of the establishment of St. Paul Lutheran Church and its spin-off congregations is Arthur C. Repp. 1940. "St. Paul's and St. Peter's Lutheran Churches. Serbin, Texas, 1855-1805." MA Thesis, St. Mary's University of San Antonio.

⁶Because of their historical importance and fragile condition, all the original church documents (congregational meeting minutes, birth and death records, etc.) were deposited in 1977 for safekeeping in the archives of the Missouri Synod in St. Louis. Xeroxes of all these documents are in Serbin.

⁷The most thorough documentation of the early migrations by the Texas Wends is in Engerrand, pp. 111-25.

⁸Genealogies compiled so far include: Dube, Falke, Fritsche, Kilian, Noack, Schmidt, Teinert, and Zwahr. There is no central repository of these important data, although George Nielsen has begun to keep an extensive file of the descendants of the Wendish immigrants.

⁹The definitive study of immigrant traditions is Reidar Th. Christiansen. 1962. European Folklore in America. Studia Norvegica #12. Oslo, Scandanavian University Books. Although the Wends are not mentioned specifically, Christiansen outlines the impact of the American experience on the newcomers in general and how their folklore changed accordingly.

¹⁰Central Texas was settled primarily by Germans, Wends, and Czechs. See Jean T. Hannafor. 1970. "The Cultural Impact of European Settlement in Central Texas in the Nineteenth Century." MA Thesis, University of Texas at Austin.

¹¹The only other large colony of Wends is in Australia. See the Appendix of Nielsen's In Search of a Home for a listing of the names of individuals in the various smaller Wendish communities throughout the U.S. and Canada. Nielsen also mentions the presence of some Wends in South Africa. There is also a Wendish Lutheran congregation in Bethlehem, Pennsylvania, which the authors will visit and document later this year.

¹²See map in Engerrand, facing p. 120.

¹³Arthur C. Repp. "St. Paul's and St. Peter's Lutheran Churches." p. 22., n. 2.

¹⁴The Wend root has been preserved in the surnames of two families, Wendland and Wende.

¹⁵The Ben Nevis passenger list was translated and first published by Anne Blasig in Wends of Texas. The original is in

the archives of The University of Texas at Austin. The Appendix of Nielsen contains the most comprehensive listing of Wendish surnames.

¹⁶Roberta Palen, a librarian at Texas A&M University, is currently conducting a survey of the cemetery at Serbin.

¹⁷Reinhold Olesch. "The West Slavic Languages in Texas," mentions in the cutline to Illustration #2 that "investigators were often guided by surnames on mailboxes in their search for speakers of European immigrant languages."

¹⁸There is no extant file of the Volksblatt, although random copies are in libraries and private collections throughout the state. A brief historical sketch of this newspaper is the basis of Jack D. Rittenhouse. 1962. Wendish Language Printing in Texas. Los Angeles, Dawson's Book Shop.

¹⁹We wish to thank the Office of University Research at Texas A&M for providing funding for this project.

A SOCIOLINGUISTIC DESCRIPTION OF RELIGIOUS COMMUNICATION:
A CASE STUDY OF AN EVANGELICAL MESSAGE

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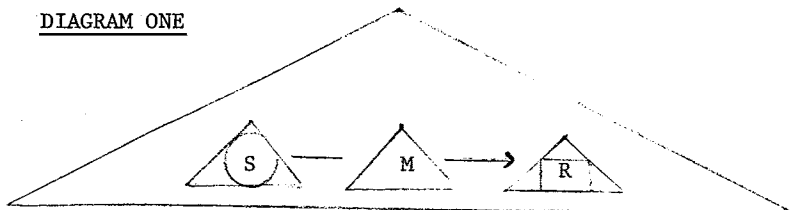
INTRODUCTION: This paper deals with some methodological principles and procedures for describing religious communication from a sociolinguistic perspective. To achieve a sociolinguistic description of religious communication initiated from within the religious system to which evangelicals belong as a subsystem, we are presently conducting a study of listeners' responses to a sample of evangelical-Christian communication. Evangelicalism is a cross-cultural, cross-denominational movement characterized by a distinctive theological outlook. It is neither restricted to the ecclesiastical label which has been applied historically to certain denominations derived from the Reformation nor is it inflated to such an extent as to embrace any and all religious groups which speak of being 'born-again'.¹

Evangelicals are well suited to serve as the source-group for this study because of their concern for communicating an awareness of the cognitive dimensions of their belief structure both to those within the subsystem as well as to outsiders. The evangelical movement rests on the explicit statement of the cognitive dimensions of its belief structure; those within the evangelical subsystem are encouraged to be cognizant of the biblical basis for their beliefs. This emphasis upon informative communication is necessary within the context of a study which attempts to evaluate (1) the similarity as well as dissimilarity of the evangelical belief structure in comparison with the expressed cognitive dimensions of those belonging to other religious systems and subsystems; (2) the extent to which the listener's belief structure guides his interpretation of the message; and (3) the extent to which listeners relate to the message on a cognitive basis. It is hoped that this article will provide the methodological foundation necessary for further development of the means for achieving these stated objectives.

¹ For a more indepth discussion of the evangelical movement refer to Webber (1978) and Kantzer (1978).

COMMUNICATION: Communication occurs in a cultural setting. In diagram one, Eugene Nida (1960:35-39) illustrates the relationship between the cultural context, the linguistic form of the message, and the backgrounds of the participants. The larger triangle represents the total cultural context while the smaller triangles indicate that the speaker (S), receiver (R), and the message (M) are all integral elements of the same cultural complex.

DIAGRAM ONE



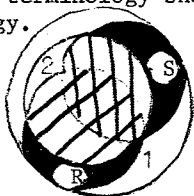
Language and culture form an inter-related whole. Thus if every culture possesses a language, then we would expect there to be varieties of that language corresponding to subcultural divisions within the larger culture. Such varieties have been called dialects, accents, jargons, etc.. A religious system represents a subcultural division within the larger culture. The variety of language used by members of the system has been described as a form of religious jargon. G.L.Trager defines "jargon" as a variety of language "characterized chiefly by special vocabulary, but usually has the same sounds and grammar as the ordinary speech of members of the group"(1972:16). Two separate levels must be considered when discussing 'special' vocabulary, namely, the lexical and semantic levels. Some of the terminology of religious communication may be in common use by the general public in a secular context, but with quite a different meaning than that assigned to it in the context of religious discourse. In other words, lexically 'common', but semantically 'special'. Other terms, or expressions, may be both lexically and semantically special.

It is doubtful, however, whether the term 'jargon' is in fact a suitable label for the variety of language used in religious discourse. The term 'jargon', as defined above, is appropriate only for those linguistic varieties characterized by systematic variation on the lexical level; we cannot rule out, however, the possibility of systematic variation on other linguistic levels as well. Use of the term 'jargon' is further complicated by the negative connotation with which it is associated. While linguists should make every effort to use the available vernacular terminology; they nevertheless must do so without redefining them within the context of academic discourse. Since the use of the term 'jargon' in this study would require such special qualifications, it seems that the designation 'religious communication' provides a preferable and fully adequate alternative.

Religious communication is characterized by SUBsystematic variation along cognitive and stylistic dimensions. Variation along the cognitive dimension of religious discourse is readily observable on

the semantic and lexical levels. On the semantic level, subsystems possess different sets of usage rules for the same terminology. On the lexical level, certain terms or expressions are identified as peculiar to a particular subsystem. In diagram two, the larger circle (1) represents all the terminology of the religious system; the circle (2) represents the terminology shared by various subsystems -- the 'common' terminology.

DIAGRAM TWO



The two overlapping circles, labeled S and R, represent two subsystems, each with its own set of usage rules for the 'common' terminology (the intersection) and each with a set of terms peculiar to itself (the non-overlapping areas). In the case of overlap S and R not only share the same terms, but also the same set of semantic usage rules. That S and R belong to two different subsystems is indicated in diagram one by the circle around S and the square placed over R. Note that there is no circle around M. If the differences in the religious backgrounds of S and R result only in the application of different semantic content to the same words, then M will appear on the surface to be completely neutral. In this case the hearer's appropriation of the message will most likely be characterized by undetected misinterpretation. If, on the other hand, there is variation along the stylistic dimension, such that S communicates M in such a way that the linguistic and thematic form of the message is unfamiliar to R, then R will be informed by the form of M that S is a member of a different subsystem or system. To indicate this possibility in diagram one we must place a circle around M as well as S.

The religious system within which such subsystematic variation occurs, is defined on the basis of a shared text-base. The Bible, Old and New Testaments, is the text-base and lexical source for much of the religious system to which evangelicals belong as a subsystem. In the case of the vocabulary belonging to a religious system consisting of the shared terminology of various subsystems, we can expect there to be a variety of meanings attributed to the same words, corresponding to subsystematic variation along the cognitive dimension. The result is pseudo-comprehension, as Gumperz states, "Two speakers may speak closely related and on the surface mutually intelligible varieties of the same language, but they may, nevertheless misunderstand each other because of differences in usage rules resulting from differences in background" (1970:138).

METHODOLOGICAL PRINCIPLES: Corresponding to the cognitive dimension of religious discourse is the declarative function, i.e. "the use of language to express the cognitive orientation of an individual or societal group..." (Smith, 1973:105). The Religious Language Survey

is a research project, presently underway, which analyzes the responses of listeners from various religious and social backgrounds to an informative presentation of the Christian message. Listeners' ideational responses are evaluated in terms of comprehension and source-identification. Comprehension is tested by comparing the semantic content of the message as it is intended by the source with how it is received by the listeners. Source-identification analysis leads to the discovery of those linguistic and thematic aspects of the message which signal to the listener that the source belongs to a different religious group.

RELIGIOUS LANGUAGE SURVEY: Test participants are presented with a list of terms and questioned as to which terms are used in the context of religious communication by either themselves or by others of similar religious background.

In the next stage of the survey participants are asked to write out a brief definition for each term on the list. They are allowed twenty minutes to complete this task; if they encounter difficulty in supplying a definition for a particular term, then they are asked to leave a question mark and proceed to the next term.

A participant's failure to supply a ready 'folk-definition' may result either from an unfamiliarity with the term itself, or from an inability to spontaneously express his/her knowledge. It may even be the case that the participant is familiar with the term but has no intellectual understanding of its meaning. In order to verify which of these three possibilities is applicable in each case, we have introduced into our survey a multiple-choice test for the same set of terms. Of six possible choices, four (a-d) indicate various possible definitions appropriate for each term in a context similar to that in which it appears in the survey message. In other words, the semantic variation is subsystem-derived, rather than dependent on variation in context. The fifth choice reads, (e) "Other _____", providing space for a write-in definition; choice six simply states, (f) "I do not know the meaning of this term." The multiple-choice responses will provide an adequate representation of the survey participants' intellectual understanding of the terminology.

PARTICIPANT BACKGROUND INFORMATION: Observation of participants' definitions and comments in Response Section One (RS-I) will provide the lexical and semantic information necessary for a description of the subsystematic varieties of Christian communication along the cognitive dimension. Of course, the initial list of terminology must gradually be expanded in order to reveal the complete inventory of lexical elements belonging to the system. Consistent patterns of response for RS-I are to be correlated with the participants' backgrounds in order to produce a truly sociolinguistic means of mapping religious systems and subsystems. Awareness of the backgrounds of the participants is sought at two points in the research: first, in informant selection; second, by means of the

Religious Background Questionnaire. Wolfgang Wülfel in his article, "Community Profiles: An Alternative Approach to Linguistic Informant Selection", proposes a method of informant selection which is based on a brief ethnographic study of the community. Such a study is expected to reveal sufficient sociolinguistic and sociocultural information to permit the selection of an informant sample which is representative of the target population. The more thoroughly the researcher elaborates the Community Profile the smaller can be the number of subjects for adequate representation. Wülfel states, "The question about the size of the informant sample, i.e. its quantitative ratio to the total population, now becomes less relevant and dependent rather upon the quality, i.e. the representativeness of the sample" (1976:53).

The information provided by the community profile is supplemented in the survey by the Religious Background Questionnaire (RBQ) which asks questions about the involvement of each participant in religious activities in terms of duration and degree. Participants are also requested to evaluate on a six-point scale their knowledge of the following: (1) the contents of the written authority for their religious group; (2) the claims of Jesus Christ; and (3) the basic beliefs of Christianity. James F. Engel suggests the use of a six- or seven-point scale primarily because people generally do not use the extreme categories on the scale (1977:98). In the course of data analysis the six-point rating scale becomes reduced to four with the two most extreme positions being combined with either their immediate predecessor or successor depending on which end of the scale the extreme is located. The participant is then asked to describe where and how this knowledge was obtained, e.g. Sunday School, personal study, etc.. Finally participants are asked to write-in for each category of knowledge whether he/she has enough knowledge already or would like to learn more in the future.

By comparing the information obtained in the RBQ with the responses from RS-I it is possible to go beyond the sociolinguistic and sociocultural parameters of description and include something that Paul Garvin has pointed out and for which I have introduced the term 'socio-cognitive scale'. At one end of the scale there are those religious groups which are caught up in what Martin Marty refers to as the movement "beyond belief into a religious style that accents experience over cognitive dimensions" (1976:45). For those groups lacking a cognitive basis for their beliefs, words serve as some kind of legalistic password for orthodoxy and religious communication functions primarily to communicate mood. Moving along the socio-cognitive scale there is an increasing emphasis on the importance of knowing the what and why of one's belief structure. Presumably one's position on the socio-cognitive scale will effect his/her response to an informative presentation of the Christian message. On the experience oriented level of the scale there are those participants who are familiar with the terminology but nevertheless are unable to associate any meaning with the terminology. They lack

interest in improving their knowledge even though it may be low in their own estimation. Participants who answer the multiple-choice meaning identifications are positioned further along the scale; those who provide folk-definitions even further.

MESSAGE: In the message section of the survey participants are each handed a copy of the message and asked to read along as the survey moderator reads the message. The brief message was prepared specifically for use with this test by an evangelical theologian from North America. The participants are not informed as to the religious background or affiliation of the source. A sample portion of the message is presented here:

"The Bible presents a true report of man's condition. Yet no one can read the Bible without being confronted with the message of God's grace. There is hope in the midst of man's wretchedness; not because man can merit God's love, but because God freely bestows it. Jesus Christ is the Gospel message. God became a man and lived out His earthly years in perfect holiness. The purpose of the incarnation, however, was not simply to provide a model for our emulation. Jesus Christ became man in order to lay down His life as a perfect sacrifice for our sin. He took upon Himself the punishment that is our due penalty.

In His love and justice, God could not ignore sin. The true moral guilt of man necessitated the life, death and resurrection of Christ. Only through faith in Christ can man be reconciled to God. He is saved, not by good works, but by Christ who transforms the individual in a genuine conversion experience. Belief is not a mere mental 'yes' to Biblical facts, but a total commitment to Jesus Christ. Only in this way is man restored to true fellowship with God. Prayer becomes a reality, true forgiveness is experienced, and the disciple of Christ is assured of eternal life. The born-again believer is cleansed through the Blood of Christ and is liberated through the Holy Spirit to begin the process of sanctification."

RESPONSE SECTION TWO: In the first stage of RS-II participants are asked to comment briefly about the message and identify the religious background of the source. Pilot testing of the survey message provided the following responses:

(A) "I can't understand this, it's all gobbly-gook...must be some protestant sect...None of this makes any sense to me. It is like trying to decode a special language. This is the way I feel protestants 'talked' and I just can't seem to get into it, as if my Catholicism from the past is there and can be tapped, hence, I can define the words from that perspective, but I can't go on from there."

(B) "I found this an interesting journey into my past. Called up all kinds of visual and aural memories for me. The 'sermonette'...caused me to click right into that frame of mind I was in before I left the church at age twenty. Felt lulled and comfortable and non-rational. It was a real message (without much textual message!)."

(C) "I believe that whoever wrote this is a born-again Christian

for he/she understands it so well. It expresses my feelings and beliefs about Christianity but maybe leaving out a little of the personal relationship with Christ that a person can have. I would consider this person evangelical but have no idea what denomination."

After the participants' copies of the message are collected by the survey moderator, they are then given a list of the same terms as appeared on the RS-I list and requested to state whether their meaning for each term is the same as that which appears in the message. The participants are told that they must decide on the basis of how they remember the term was used in the message. If they decide it was different, then they are asked to supply the meaning of the word or phrase as they believe the source intended it. If the particular usage of the term suggests a different meaning to the participant, but he/she does not understand its meaning, then they are asked to leave three question marks. Participants who were unable to define the term in RS-I, i.e. those who chose (f) in the multiple choice part, are asked to indicate this with the appropriate response as shown in the accompanying response guide (///), and if possible proceed to define the term as it is used in the message. Survey participants also have the option to draw an X through the term that they do not recall being used in the message. This option is restricted, however, to one application.

SURVEY ANALYSIS: RESPONSE FEATURES: The source supplied me with definitions for each term on the survey list to indicate his intended meaning for the words as they appear in the message. With the exception of one term all remaining terms are contained in the message. The definitions provided by the source are offered as definition choices on the multiple-choice part of the RS-I.

The following features form the basis for an analytical treatment of the survey results:

- (1) + or - COMMON --- the feature COMMON indicates whether the participant claimed in RS-I that the term is used in the context of religious discourse by either himself or by others of similar religious background; +COM if it is, -COM if it is not.
- (2) + or - A --- this feature indicates whether the participant chose the source's definition on the multiple-choice part of RS-I (+A) or made a different definition choice (-A).
- (3) + or - B --- this feature indicates the participant's ability (+B) or inability (-B) to recognize the sameness or difference between his definition choice and the source's intended meaning.
- (4) + or - C --- this feature indicates the participant's opinion that he correctly (+C) understood the source's intended meaning, or that he did not understand the meaning (-C).
- (5) + or - D --- this feature indicates the objective verification of the participant's success (+D) or failure (-D) in correctly interpreting the source's intended meaning.
- (6) ? --- this feature is assigned if the participant chose (f) on the multiple-choice part of RS-I.

FEATURE ASSIGNMENT: CHART ONE

<u>FEATURE</u>	<u>RS-I</u>	<u>RS-II</u>	<u>MC:S</u>	<u>DII:S</u>
+COM	yes			
-COM	no			
+A			=	
-A			≠	
+B		SAME	=	
		DIFFERENT	≠	
-B		SAME	≠	
		DIFFERENT	=	
+C		SAME		
		DIFFERENT		
-C		///with definition		
		???		
+D		/// no definition		
		SAME	=	
		DIFFERENT	≠	=
		///with definition		=
-D		SAME	≠	
		DIFFERENT	=	≠
		DIFFERENT	≠	≠
		///with definition		≠
		/// no definition		
?		///		

KEY

RS-I --- the survey participant's response to the initial question in Response Section One.

RS-II--- the survey participant's response for the terms in Response Section Two.

MC --- the survey participant's response on the multiple-choice part of RS-I.

S --- definition provided by source of the message for the term as it is used in the message.

: --- "compared with"

= --- "is semantically equivalent to"

≠ --- "is semantically different from"

DII --- participant's definition given in RS-II.

RESPONSE CATEGORIES: Consistent patterns of response classification are correlated with participants' backgrounds in order to make predictions about how members of other subsystems will receive and comprehend an evangelical Christian message. Returning to diagram two, we can graphically illustrate the possible categories of response.

If S uses a word from the shaded area, then it will be a word lexically foreign (-COM) to R for which R may or may not have an intellectual understanding depending on R familiarity with the subsystem of S. Possible categories of response for the shaded area include:

- | | |
|--------------------------|---------------------|
| (1) -COM, -A, +B, +C, +D | (5) -COM, ?, +C, +D |
| (2) " " " " -D | (6) " " " " -D |
| (3) " " " -C " | (7) " " -C " |
| (4) " " -B +C " | |

If S uses a word from inside the common terminology (+COM), but outside of the overlap area, then R's response will fall into one of the following categories:

- | | |
|--------------------------|---------------------------|
| (8) +COM, -A, +B, +C, +D | (10) +COM, -A, +B, -C, -D |
| (9) " " " " -D | (11) " " -B +C " |

Pilot study results revealed that in the case of one survey participant, undetected misinterpretation (-A,-B,+C,-D) extended to such strategic words as: God, born-again, Christian, resurrection, holiness, cleansed, Hell, devil, and conversion. On the other hand, further research along the lines of source-identification analysis is necessary in order to determine what aspects of M alert R to the fact that S belongs to a different subsystem with different semantic usage rules for the same terminology (-A,+B).

In the overlap area where the terminology is lexically and semantically equivalent, R's response may fit the following categories:

- | |
|---------------------------|
| (12) +COM, +A, +B, +C, +D |
| (13) " " -B -C -D |
| (14) " " " +C " |

Our diagram of the cognitive dimension cannot handle the response categories with the following feature combination which indicate that the participant, although familiar with the term, nevertheless has no intellectual understanding of its meaning prior to hearing the message: +COM, ?, +C, +D.

In the context of the comprehension test the survey participant's attention is focused on the meaning of selected terminology, thus preventing the controlled evaluation of the extent to which listeners relate to the message on a cognitive basis. The evaluation procedure must be operationalized in an initial position of the survey so as to avoid biasing the participant's response in favor of a cognitive approach to the message. The procedural format is presently in the process of being prepared for inclusion in the Religious Language Survey.

CONCLUSION: PROJECTED GOALS AND APPLICATION: In this paper I have presented a brief overview of some basic methodological principles and procedures which have been employed in the Religious Language Survey. It is hoped that the information obtained through the application of the survey in this case study will lead to an empirically-based, theoretically significant sociolinguistic description of evangelical communication. Moreover such information may possibly be applied by the concerned communicator to avoid

the problems of ambiguous proclamation, the listener's false interpretation caused by pseudo-comprehension, and the deceptive nature of a commitment resting on manipulation or cultural symbols.

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TITLES, STRATEGIES, AND STATUS: A RELATIONAL PERSPECTIVE

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0. Introduction

In earlier papers (The Second Foundation 1976, 1977, 1978) we have discussed various aspects of a bistratal model of social interaction which is intended to be integrable with linguistic analyses done within the framework of stratificational theory. We now feel that enough broad structure of the model has been established to allow it to be further tested and refined by its application to the analysis of more complex data than we have previously dealt with. This paper is a preliminary step toward a projected larger and more detailed work dealing with the use of titles as forms of address in American English.¹

There is a growing amount of literature dealing with forms of address. Some of them, such as the well-known study by Brown and Gilman (1960), discuss the use of pronouns to express social relationships, whereas others, such as Moles' study of Peruvian Indians (1974), deal with nicknames, occupational titles, and kinship terms as well as pronouns. In all cases there seems to be the assumption that "the grammar of a language" involves more than the description of its syntactic and phonological structure and that the domain of linguistic competence must be expanded to include social competence in language use.

In this paper we will examine some aspects of titles and other address forms as used by the staff of a research unit of the National Institute of Mental Health.² The data which we have so far are by no means complete, but definite patterns involving the use of first names and the title "Dr." have become apparent. Even a limited amount of data involves quite complex relationships, however, and space limitations will allow only a cursory discussion of some of the more interesting points.

1. The Basic Structures

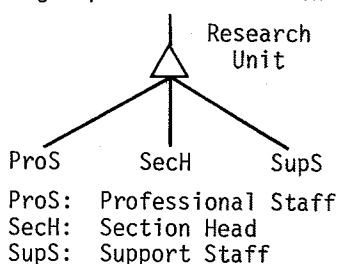
The use of address forms among members of the research unit is surprisingly rigid, with very little deviation from established norms ever occurring. This is perhaps to be expected, however, since the unit itself is composed of three clearly delineated administrative subgroups, as shown in Figure 1. The close relationship between a group's social structure and its social rituals has lead some social scientists to believe that such rituals not only reflect social structures but also help maintain them. Erving Goffman is a well-known proponent of this view, and Albert Scheflen has reached similar conclusions through his research in kinesics (1972). The stability of behavior patterns involving address forms

within the research unit does not seem to offer any counterevidence to this view.

Within the research unit, the following patterns of address hold:

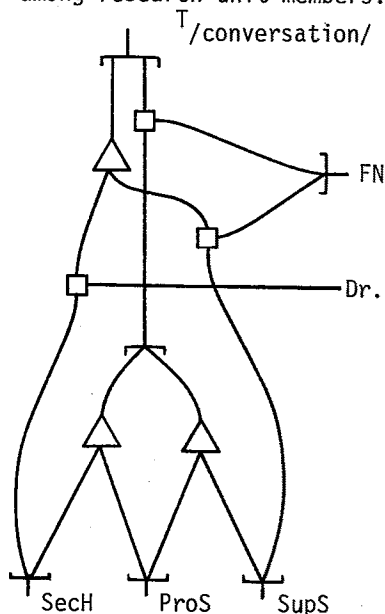
1. The Section Head uses first name with everyone.
2. The Professional Staff use first name with everyone.
3. The Support Staff use first name with everyone except the Section Head, whom they address as "Dr."

Figure 1: Administrative sub-groups in the research unit.



the address practices observed among members of the research unit, and Figure 3 shows the integration of Figures 1 and 2.

Figure 2: Forms of address among research unit members.



FN: First Name

In our model of behavior, the information concerning forms of address is treated at a lower level than that concerning the administrative structure of the research unit.³ This is done because the administrative structure is a stable arena in which staff members may act out various transactions, such as alternating between the role of speaker and listener in a conversation. Figure 2 is a simplified representation of

At this point we have presented the basic structures which account for the behavior of staff members, and we may now proceed to discuss some of the variations within the basic structure which must ultimately be accounted for.

2. Variation and Strategies

There is some variation in the use of the title "Dr." in that it may occur with or without the last name of the individual addressed, the form with the last name being used in somewhat more formal settings, as in an introduction. One way of accounting for this difference is through the use of an eclectic network as described in Herrick (1977); Figure 4 shows the interaction of a stylistic element /formal/ (which is most likely defined in the sociotactics) and a portion of the semology which will account for the variation involving the occurrence of a last name with the title "Dr."

Figure 3: The integration of Figures 1 and 2.

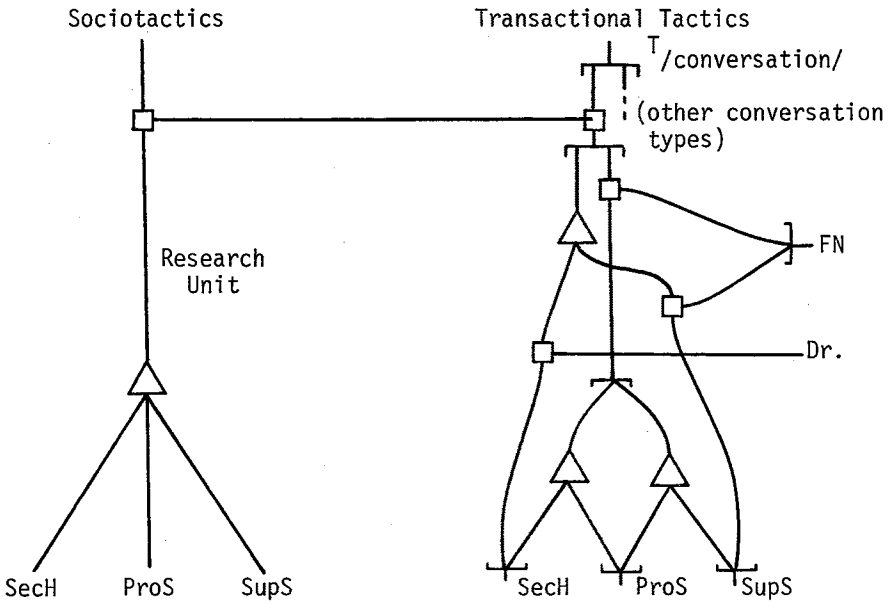
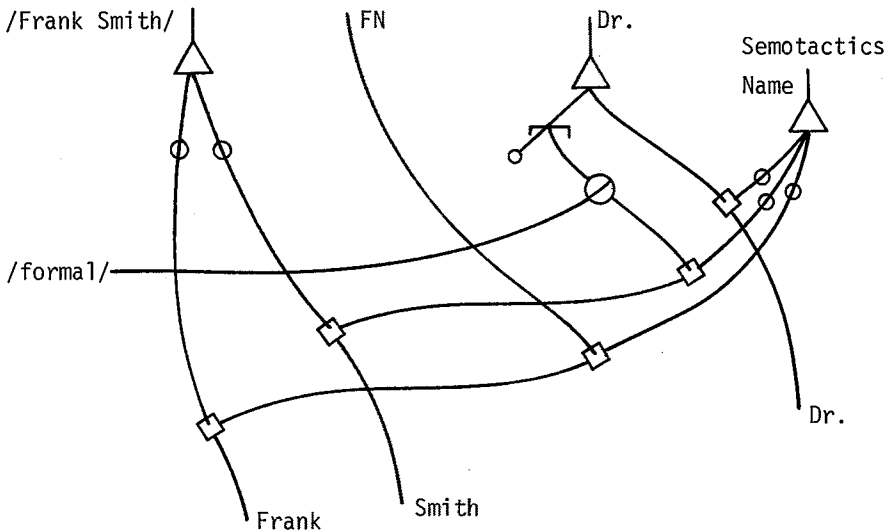


Figure 4: The semotactic structure of a name and the occurrence of a last name with the title "Dr." to indicate formality.



In a sense, the use of an eclectic network can be seen as providing a manner of treating the occurrence of a last name with the title "Dr." as a code-switch--or perhaps "register switch" would be more appropriate, since the variation entails two varieties of the same language rather than two different languages. In this example, /formal/ is treated as the marked register; in the absence of the last name with the title, the unmarked register /informal/ is assumed to be in effect.

Although our treatment of them has not yet been formalized, the variables of gender and age also play a part in determining forms of address in certain instances. For example, it sometimes happens that when two Ph.D.'s are introduced at a seminar presentation in the unit, a situation which normally calls for a formal introduction, they are introduced as "Dr. X and Miss Y." This is probably a reflection of the higher status that our culture generally ascribes to males.

There is also evidence that the social rank of the husband is another variable which must be accounted for in determining interaction among female staff members. From the most important to the least important, the factors which determine behavior are then:

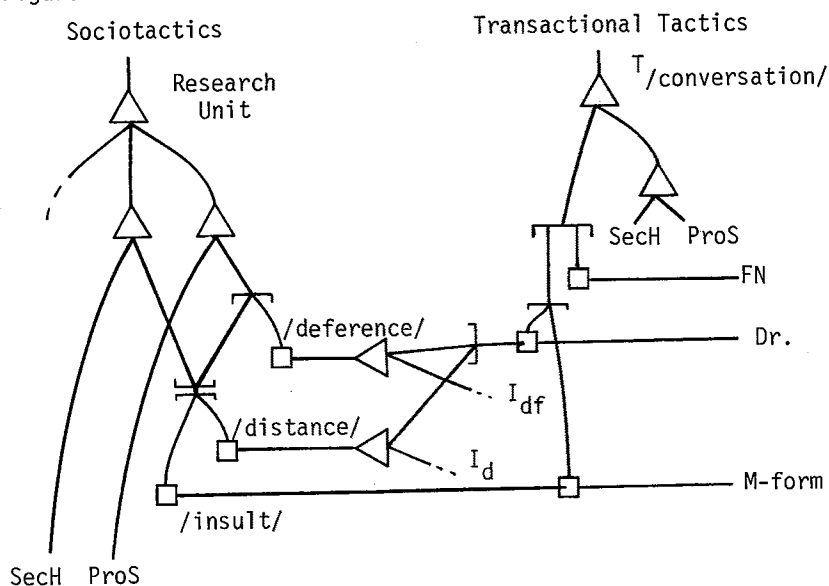
1. Rank within the administration
2. Gender
3. Age
4. Social rank of husband (for females)

Further research is needed to determine exactly how these variables interact and what behaviors they control, but it is likely that the treatment of these factors will involve mostly transactional tactic relationships and not sociotactic relationships.

Di Pietro (1976) has called for an investigation into the strategies of language use, and at least some of these strategies can be accommodated within our model. For example, the Section Head and a member of the Professional Staff normally address each other with first names, but it is also possible for them to use "Dr." or even one of the "M-forms"--"Mr.," "Ms.," and so on. The use of an M-form can probably be construed as the realization of a strategy of /insult/ (to whatever degree), whereas the use of "Dr." can be either a strategy of /deference/ or of /distance/, depending upon the intonation.⁴

Figure 5 shows a possible network representation of this situation. At the sociotactic level, members of the research unit have access to certain strategies.⁵ Because he or she commands more power within the administrative structure of the unit, it is unlikely that a Section Head would need to be deferential to a member of the Professional Staff, and for this reason only the Professional Staff are shown to have access to the strategy /deference/ in this case. At the transactional level, "M-form" is shown to be the realization of the strategy /insult/, and "Dr." is shown to be the realization of either /distance/ or /deference/ depending on whether it occurs with the intonation pattern I_d or I_{df} . The unmarked address form is again shown to be FN.

Figure 5: The realization of various strategies as address forms.



3. Non-linguistic Phenomena

Social relationships are manifested by both linguistic and non-linguistic behavior, and we would like to be able to account for both types within our model. Among the non-linguistic data which need to be treated are

1. Who goes to whom is determined by rank; that is, lower ranking persons must go to the offices of higher ranking persons when either party wishes to meet with the other.
2. Higher ranking persons can keep lower ranking persons waiting without risking their control over an interaction.

Our own work in the area of the non-linguistic realization of social relationships is limited, but behavior such as that given in 1. above will probably be treated in the transactional tactics, whereas the datum described in 2. will require the integration of a timing mechanism into the model. In addition to the two behaviors cited here, there are many other kinesic realizations of social relationships, realizations that apply to the culture in general. One such kinesic realization of dominance is the "arms-behind-the-head" pose as reported in Schefflen (1972). Another such realization occurs when a superordinate stands over a seated subordinate.⁶

Clearly much more work in applying a relational network model to the linguistic and non-linguistic realizations of social structures is needed, but we hope to have shown in this paper that such a model is at least capable of handling certain facts about the use of titles and other forms of address as observed so far in our investigation of the social structure of a research unit in the National Institute of Mental Health.

NOTES

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1. We are not as heavily committed to the bistratal nature of our model as we once were, for a variety of reasons. Our distinction between sociotactics and transactional tactics seems to parallel in several ways the abstract/functional distinction as discussed by Griffen (in this volume); if, as he maintains, phonology and phonetics should be treated without separate strata, the same tack may hold for the socio- and transactional tactics of our model. This would result in a configuration closer to the communicational stratum (or system) of Fleming (also in this volume). At this point, it may be better to say that we are committed to a bisystemic model of social structure, with the option to arrange them hierarchically in terms of strata being left open. It is hoped that further research will clarify this situation.
2. Data was collected by the female co-author, who works in the unit under study and who also played the part of participant-observer. For a discussion of the methodology used, see Festinger *et al.* (1956).
3. Again, the words "in a different system" may be substituted for "at a lower level." Part of the reason for collapsing the socio- and transactional tactics can be seen in the isomorphism which occurs between SecH, SupS, and ProS in Figure 3, although compare Figure 5, where diversification between these two levels seems to occur.
4. Intonation can, of course, be realized over a whole unit of discourse; in Figure 5, the lines representing intonation are assumed to lead directly into the phonology, bypassing intermediate strata. William J. Sullivan deserves credit for suggesting the neutralization of the two "Dr.'s" between the sociotactics and the transactional tactics.
5. For a further discussion of strategies, see Di Pietro (1976) and The Second Foundation (1977, 1978).
6. Hopefully we will be able to integrate our work with that of Preziosi (see his article in this volume, for example); there have been two stratificational analyses of kinesic phenomena, Ljung (1965) and Ikegami (1971), but both of these deal with very language-like systems. It remains to be seen how well

the relational network notation can be adapted to data such as those described here. For a performance model that may be capable of handling the timing involved in 2., see Dell and Reich (1977).

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SEXISM AND LANGUAGE STRUCTURE

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Undeniably, a measure of sexism exists in the English language, and the mushrooming research on this subject has, in the past ten years, yielded interesting results. Today, it is no more a question of if English is a sexist language, but to what extent it is sexist. The time is way passed to quibble about the "generic he" versus a new pronoun, free of sexual bias, and even many conservative English teachers are beginning to accept the sentence "everyone should do their work" as a viable, "correct" English structure. The title Ms. is firmly established in polite English usage, and "the nurse is . . ." not any more a docile, deferential woman who assists the assertive, dominant male doctor (Blauberger). The question of how often the word woman can be substituted for the word man in compound nouns is now a question of how a psychologically non-sexist word could be a substitute for both; e.g. chair for chairman, chairwoman, and chairperson. And, the once cute remarks such as human and huwoman or commander and commowoman are no more cute or even socially rewarding if a laugh is expected to follow such remarks.

So far, most of the research on woman's language in the United States has focused on the synchronic study of language, assuming that it is the nature of the present society the language is reflecting. Such an assumption might be correct, except that there are baffling questions that remain to be answered which cannot be answered by synchronic studies: today's language may not directly reflect today's social consciousness of an individual or a society. Moreover, the structure of a language may permit sexism because of long historical and developmental factors, which should be studied diachronically if more than just a surface understanding of the problem is intended. In addition, a comparative study of several languages will provide rewarding results concerning sexism in the English Language, especially if these languages are chosen from non-Indo-European groups. Such languages will provide touchstones whereby archetypal sexist elements could be identified, if one has a bent to Jungian epistemology.

As a native-born Azarbayjani, I have been keenly aware of the double pronoun for the third person singular in the English Language. Even after thirty years of speaking and writing in English, occasionally, I surprise people with a confusion of he and she. Azarbayjani does not have this discrimination. I have

also been struck by the disparity that exists between sexism at large in a society and the language that mirrors the attitude of that society. Decidedly, the Azarbayjani and the Persian societies--Persian being my earlier intellectual language--are by far more sexist in 1978 than the American society. It was not until ten years ago that women could vote, and in Iran marriage benefits the husband more than the wife: a wife, upon marriage, cannot leave the country without written permission from the husband. Generally, women have had a third class citizenship: men first, male offspring second, and female third. Suffice it to say that the society is patriarchal and women's rights are far and in-between. Surprisingly, however, the Azarbayjani and Persian languages are far less sexist lexically than the English Language. If one were to claim that a language definitely reflects the social consciousness of a society, then one will have to consider Persian and Azarbayjani as exceptions rather than norms. Of course, Persian is an Indo-European language, and one can make a case for it historically and pair it with the English Language. After all, they have the same origin some place in the past. However, Azarbayjani is a non-Indo-European language, and such a reasoning cannot be valid.

To test further, I decided to experiment with some other languages that neither have genealogical nor socio-historical connections with the English Language. For this purpose I interviewed two Nigerian students at Middle Tennessee State University: Ms. Bolakunmi Oyebanjo, a Yoruban, and Mr. Ozumba, an Ibo. I personally do not know Yoruban or Ibo, and my information about the social structure of Nigeria is exceedingly limited: all I know comes from Achebe's novels, particularly Things Fall Apart. According to my informants (No. 1 referring to Ms. Oyebanjo and No. 2 to Mr. Ozumba) the Nigerian social structure favors man, and it is by and large a patriarchal society. The society is composed of the two major tribes of Yoruba and Ibo, yet there are sub-tribal classes. The society ". . . is made for men, and women don't participate [in the social affairs]. . ." (No. 1). From what I can surmise, both major groups have structured, suppressive societies where women, worse than in the Persian and Azarbayjani societies, are just domestic servants, "although times are changing . . ." (No. 1).

However, surprisingly, the languages of Ibo and Yoruba are by far less sexist than the English language.

To further illustrate the point, I should like to refer to the two Nigerian languages and Persian as well as Azarbayjani. Examples from the Nigerian languages have been selected from a large number of statements made by the Nigerian students, taped at the Learning Resources Center of Middle Tennessee State University. I have used myself as the native informant for Persian and Azarbayjani with occasional checking with other Persians who live in the Middle Tennessee area. Since this report is an intro-

duction to what might be a detailed future study, the examples cited in this paper are taken from among many with an eye to the most cliché examples, those used by many in the United States to show sexism in the English Language. By the way, the following examples do not have a necessarily organic unity, and they only serve a purpose in supporting my theory.

1. In neither Azarbayjani nor in Persian is there a discrimination of sex in the third person singular pronoun: /u/ in Persian and /o/ in Azarbayjani refer to both male and female persons. In Yoruban there are two pronouns: /o/ for a person with the same status or the same age as the speaker, and /ɛ/ for either an older person or a person of higher status than the speaker. There is no sex discrimination in this system. In the Ibo Language there is a generic pronoun /o/; however, there are two other morphemes that function as pronouns, one bound and one free morpheme. The word /okɛ/ refers to any male animal and might work as a free morpheme in a compound. Often /okɛ/ replaces the compound /nu + okɛ/ (man creature, he creature). However, the morpheme /-onyai/ does not have a meaning independent from a free morpheme to which it might attach and give a female quality. For example, /nu +-onyai/ (she creature) refers to a female human being, but */-onyai/ is not possible. These two morphemes combine to refer to a she-goat or a he-goat, etc.

None of the other persons in the pronominal paradigm indicate sex discrimination in any of these four languages.

2. The English Language allows practically unlimited compounding: words can criss-cross class boundaries and create new forms. For any Persian who has studied English, compounding and word expansion not only pose semantic problems, but they become an intriguing game: fish, fisher, fisherman, fishmonger, fishplate, fishmeal, etc. In my four sample languages compounding possibilities are limited: either phrases or special clitics (enclitics in Persian and in Azarbayjani) provide semantic expansion. Even this process is limited by structural and morphophonemic considerations. In Azarbayjani as many as nine bound morphemes can be added to a verb stem and as many as four to a noun stem; however, combining free morphemes to create new forms is rare.

In Persian a fisherman is /mahi-gir/ (fish catch), in Azarbayjani /ballix-čI/ (fish maker/doer), in Yoruban /ap^hɛja^h/, and in Ibo /ogbuazU/. In the Nigerian Languages the words are simple free morphemes.

3. In English certain words have traditionally carried a sex feature in their semantic component: e.g. doctor/male, hunter/male, baker/male, cook/female, etc. Both Persian and Azarbayjani have adopted the word for doctor from French: /duhdur/ and /doktor/. In Yoruba the word is a compound /babba+lau/, /babba/

meaning father and /lau/instrument: thus, father instrument. It is not possible to make a feminine reference by adding /ɛya/ to /lau/ and make */ɛya+lau/. This word was made up by the informant to show that occasionally compounding is possible, but that it is restricted in structure. Possibly, the word is a new coinage, referring to the western kind of a physician. Thus, very much like its western counterpart, the word is sex biased. However, there is a generic word for a medicine person in Yoruban, /onišɛgun/, literally meaning a healer. This term refers to a healer of lesser skills and a lower status than a /babba+lau/ in the structure of the social hierarchy. If one were to refer to a /babba+lau/ as an /onišɛgun/ ". . . you don't know what you are talking about," (No. 1). If mistakenly /onišɛgun/ is used, "he [the doctor] may not get up-set, but he will know you don't know what you are talking about. (No. 1). /onišɛgun/, now, refers generally to a female healer or a healer of lesser power, although the word does not contain a sex code. In Ibo the word for a healer is /dIbya/, which can be used for both sexes.

A hunter is /sæyyad/ in Persian and various phrases in Azarbayjani, depending on the kind of hunter, e.g. /guš + vIr-an/ (bird + hitter), /goš + vIr-an/ (ram + hitter) etc. In Yoruba the word is /odde/ or /oddi/. In these three languages there are no sex features attached to the words. In Ibo the word is /ogbanta/, which only refers to a male person and cannot be used for a female. There is no word to describe a female hunter.

The Persian word for a baker is /noon- pæz/ (bread cooker) and the word for a cook is /aš-pæz/ (soup cooker). In Azarbayjani the words are /čēræh-čI/ and /kulfæt/. In Yoruban an English word provides the element for a bread baker, /oni + buredi/ (a person bread). In Yoruban the word for a cook is /sɛyjɛn/ (/sɛy/ meaning a cook and /-jɛn/ meaning food). In Ibo the word for a cook is /isi-nnri/ (isi-/ meaning to cook and /-nnri/ meaning food).

In none of these languages is there a sex feature attached to the semantic components of the words, although in Azarbayjani and Persian culturally one would refer to a cook as a female. In Yoruban, ". . . doing and being active is man's job" (No. 1). Women are expected to be passive and followers. Although the Yoruba and Ibo languages do not reflect sex features in these words, yet my informants classified work done by men and that done by women: cooking is a job reserved for the female.

The list of examples could be extended, and many interesting comparisons could be made (for a good list see Alleen Pace Nilsen, "Sexism in English"). The list I have available convinces me that lexically a language does not necessarily reflect the consciousness of a society. In other words, English is probably more sexist lexically, whereas the other four languages are less sexist. Yet, the American society is by far less sexist than the societies that speak the other languages.

Lexical sexism, however, is quite manageable; its roots could be explored in the structure of a language that historically permits, for example, a double pronoun in the third person singular. In English one will have to trace it to Anglo-Saxon, Primitive Germanic, and eventually to the Indo-European. Besides, one may have to look at the nineteenth century records of the British Parliament to see that a joke dealing with the "generic he" has turned into a fight over "correct grammar and agreement problems" (Stanley). I also propose that based on this limited comparative study one can assume that a language with compounding possibilities stands a better chance of being subject to lexical sexism. I will welcome any suggestions concerning this theory: my brief evaluation of Arabic, Kurdish, and Turkish lead me to believe that probably I am correct in my assumptions.

More subliminal and deeply rooted than lexical sexism is what I term metaphoric sexism. Whereas lexical sexism does not reflect true social attitudes, metaphoric sexism, indeed, reflects such attitudes. All five languages that I have worked with in preparing this paper suffer from metaphoric sexism, and the English language is not better or worse than any other language. As a matter of fact, metaphoric language, which is usually phrase structured, can be found as archetypal in all of these languages plus Arabic, Kurdish, and Turkish: that is, if a metaphor exists in one language, it will exist in another.

For example, in English the word gossip has a plus female semantic feature, or as both of my Nigerian informants said, "men talk serious talk, important talk." When referring to a man, often a tag such as male gossip is added to the word to signify the male gossipiness. This word is in the order of such words as nurse, clerk, baby-sitter, for which, when intended only for female, no additional tag is necessary, but when a male is intended, then the tag male is added on, such as male nurse, male clerk, and male baby-sitter. Metaphorically, a female attribute is given to a male, and that with an apology. As in English, in Persian a /hærf-ε +šol-zæ n/ (word loose sayer) is a female attribute, and if a man, God forbid, gossips, then a tag /mærd -ε/..... must be added. So it is in Azarbayjani: /sêz-čxard-an/ is a person who fabricates words. If a male is intended, then the tag /kišI/ (man) is added finally.

In Yoruban this metaphoric transference of attributes is particularly interesting. Man talk /ajjo-okonrin/, is serious and to-the-point. /ajjo-/ means group, and the meaning of the phrase is "group creature talk men." This phrase is never used for women, who talk /šiki/. If /šiki/ is used for a man, "it is a put-down," (No. 1), and it means that the man has female attributes. Interestingly, /šiki/ is not a put-down for women: it is their natural talking manner. It must be pointed out that a man talking /šiki/ is not considered effeminate, but weak like women (No. 1). There is a third word in Yoruban, /ofofo/ (loose

talk), which can be used both for men and women, and its use is a put-down for both sexes, however affectionately.

Ibo uses the phrase /okwu+nwoke/ (talk man) for men talk; the phrase may be used for women who are strong of body and mind, those who " . . . are wise" (No. 2), thus a matriarch. The term could only be used for older women; if used for a young woman, then it means that she is cheap. Woman talk is /okwu+nwanyi/ and cannot be used to refer to man unless it is meant to slight him, to make fun of him: it is a put-down. Thus it is that man-talk can refer to women to up-grade their status, but woman-talk is only used to degrade man. As in Yoruba, there is a third word /asiri/ that can be used when referring to a woman, never a man, even as a put-down. /asiri/ is silly woman gossip without saying much (No. 2).

Metaphoric sexism goes deeper than phrase metaphors, and often similes provide a measure of sex-coded revelations. For example, the simile "He cries like a woman" is word-for-word translatable into the other four languages. In Persian it is /m'asl-e+zæn+mi-gerye/ (like woman cry [he]), in Azarbayjani, /arvat-klmIn+ azlIr/ (woman-like cry [he]), and in Yoruban, /osunkunt bobi -nrin/ (crying like woman). Obviously, the implication is that it is perfectly natural for a woman to cry, but if a man cries--or if he cries like a woman--then stigma is attached to it.

In Ibo it is a desirable trait if one were to call a woman /osirike+ka+ nwoke/ (strong as a man). However, if a man is weak like a woman /gwosiri+gwosiri/ (tender, tender), he is worthless. "A man can kill you for this" (No. 2). It is equally desirable in Ibo for a woman to walk like a man /obinrin + bokonrin/ (woman walk man walk), but it is disgraceful for a man to walk like a woman. It seems that in metaphoric sexism, it is an up-grading for a woman to be like a man and a down-grading for a man to be like a woman.

I have proposed two kinds of sexism in language: lexical and metaphoric. I have proposed that lexically sexist tags do not accurately reflect the attitude of a society and that historical causes for this kind of sexism should be sought. For this I have suggested a socio-lexical diachronic approach. Most of the contemporary literature deals with lexical sexism in language, which, while valid as a research approach, cannot explain complex social attitudes as reflected in a language. A comparative study of a limited number of languages indicates that a relatively lexically non-sexist language might be used in a more sexist society--as in Persian, Azarbayjani, Yoruba, and Ibo--and an obviously sexist language might be used in a comparatively non-sexist society--English.

On the other hand, metaphoric sexism in language seems to be universal and a better gauge of the attitudes of a society as reflected in the language of that society. This limited research and some more extended corrolary investigation convince me that there are possible archetypal, in the folkloric sense, frames, metaphoric sexism in any language. Metaphor is closely related to idiom; therefore, if idioms are readily translatable then I suggest that universal sexism exists in most languages, certainly in the eight that I have investigated. Future research in other languages will cast a better light on this assumption.

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SEMIOTICS

WHY DO WE HAVE A VOCAL LANGUAGE?

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What does an observer learn when he reads the body language of another? Is there information which cannot be communicated by body language? Is this information serviced by vocal language? Did vocal language evolve to give hominids communicative capacities beyond the range of body language?

To pursue this reasoning, we must identify what an observer discovers when he reads body language: we must describe what a performer does; what an observer sees; and what the observer "thinks" he sees. The imponderable in the task is: what do observers "think" they see? A simple, and perhaps naive, strategy is to show pictures of body language to humans and ask them to describe, verbally, what they see. This is what we did.

We had a female adult perform a series of gestures, 30 in all. The first fifteen were done while standing; the second fifteen were done while sitting in a chair. The gestures were responses to commands given by the experimenter: act pleased, puzzled, nervous, hateful, sexy, unhappy, relaxed, confident, mad, embarrassed, thinking, tired, tense, excited, vain, pleased, puzzled, bored, sexy, angry, mad, thinking, tired, thoughtful, relieved, excited, vain, aggressive, silly, and tired. Some of the commands were repeated in both postural modes; some of the commands were common sense synonyms of others, e.g., thinking and thoughtful, hate and mad. The actions of the performer were photographed with a super-8 mm movie camera (25 f.p.s., color film).

Movies are a series of still pictures which, when shown in order, above a threshold speed, produce a perception of movement. Because movies are a series of still frames, we were able to photograph the frames, producing slides of, what appeared to be, postures (in color). We selected 20 gestures and copied four frames from each gesture. The four postures represented various stages of the gesture, from its early inception to a point just antecedent to its consummation (T1, T2, T3, and T4). We called these slides "truncated" poses because they showed incomplete stages of the gestures. We randomized the 80 slides, so that the order of the truncations was broken; however, we alternated standing and sitting poses and kept poses from "synonymic" gestures separated by at least three slides.

We showed the 80 slides to 20 observers and asked them, in a single word, or short phrase, to describe what the performer appeared to be communicating with her body poses. After they

had seen the slides we showed them the gestures (movie) and asked them to, likewise, evaluate the gestures. This group saw the slides first and then the movie (Movie 2nd, or M2). To another group of 20, we showed the movie first, asking them for an evaluation, in the same terms, and then the slides, asking, again, for an evaluation (M1). Both groups saw the same pictures; the only difference was the order in which they saw the gestures. Both groups were asked to choose their own words (free responses). No limits were placed on their answers except the request to restrict their evaluations, as much as possible, to single words. They were not primed in any way before the experiment began. If questions were asked during the experiment the answer was always: "Do whatever you think is appropriate." -- with one exception; if someone asked whether any of the slides were the same, the answer was "yes."

We analyzed the gestures and slides in terms of the angles of the joints for the major limb joints (cf., Prost, 1977; Prost and Smith, 1975 and 1976). The measurements of the joints were used to graph the progress of the limbs during the gestures and compare limb configurations of the postures. The face, hands, and trunk were not systematically recorded but were compared by projecting the slides side-by-side, or in an overlay, assessing similarities and differences by eye. The joint measurements show that each gesture was different and each slide was different. Obviously the slides, being taken from the gestures, were identical to the gestures, but only to the specific gestures from which each was copied.

We used the joint measurements to plot the gestures, to discover how the gestures were constructed. We found that all the standing gestures tended to start from a single standing pose, the "neutral action center." All the sitting gestures started at or near a sitting neutral action center (cf., Prost, 1977). Each gesture radiated out from its respective center, becoming 1) more variant from the center and 2) more variant from other gestures. The gestures around a center formed a cone-like array, constricted toward the center, expanding out into space. As each gesture moved farther from the center it became more unique, until a final consummation was achieved. The truncated postures reflected this organization, i.e., the 1st truncations were similar to one another, the 2nd were less similar, the 3rd were quite different, and the 4th were completely distinct.

When the observers saw the slides, did they see the relations between the postures and the gestures? Did those who saw the movie first interpret the slides as gestures? Did those who saw the slides first guess that the slides represented gestures? Did the words chosen by the observers have any relation to the structure of the gestural field, the neutral action centers, the cone shaped array?

We found the following response patterns. Some slides were evaluated in a completely unique way. For example, slide 8 was

T1 from the sitting "pleased" gesture. Eleven respondents from the M2 sample labelled this slide with a word which they never used again for any of the other seventy-nine slides: contemplating, sewing, under, mixing, glaring, certain, anxious, crossed, pound head, interested, and bewildered. When a respondent used a word once, and never used it again, we called it an "alone" response. Some slides were labelled with a word which was repeated, one or more times, by the same individual, and the slides so labelled formed a group. For example, slide 10 was T4 from the standing "unhappy" gesture and ten respondents from the M2 sample grouped this slide with slide 17, T3 from the same gesture, calling both slides: depressed, sadness, sleeping, sad, sadness, tired, rejected, sleeping, sadness, and sorrow. We called these "grouped" responses. Note that slides 10 and 17 are grouped, not because any of the respondents used each other's word, but, because each individually grouped the two slides together. Slide 16 was T3 from the sitting "thinking" gesture and 7 respondents from M2 grouped it with slide 37, T4 of same gesture, using the words: making a point, there, trying to hear, involved, confirming, inquisitive, and thinking. Seven other respondents (M2) labelled slide 16 with "alone" words: listening, angry, replying, telling, anger, indecision, and cooperation.

We found the same response patterns for the gestures. For example, ten respondents from the M2 sample grouped gestures 1 and 4 together (standing "pleased" and "hate") with the words: disbelief, waiting, disgusted, annoyed, stubborn, uncaring, impatient, huffiness, bored, and no! Only one person in the M1 sample grouped gestures 1 and 4 together, using the response "cross arm."

How does one interpret these patterns? It is difficult to argue that words have universal meanings in light of these disparate results. The patterns have all the appearance of learned responses, words whose meanings differ according to the circumstances under which they were originally learned. If we presumed that "angry," "sad," and "happy" had universal meanings, we would have found few agreements and a welter of confusion. If we use each individual's groupings, ignoring disagreements between the words, we discover higher frequency agreements and more rational groups.

This strategy is different from those used by other investigators. For example, Darwin performed a similar experiment and found the same response patterns. He presumed the variability was generated by synonyms. "Several of the expressions were instantly recognized by almost everyone, though described in not exactly the same terms; and these may, I think, be relied on as truthful, and will hereafter be specified. On the other hand, the most widely different judgments were pronounced in regard to some of them." (Darwin, 1872, p. 14 in the 1965 reprinting, *italics mine*). Although I do not doubt the validity of the existence of synonyms, I cannot find a rationale for using

this concept to submerge the variability. For example, a respondent might use the word "shocked" on slide 5 and then "surprised," on slide 7, and "shocked" again on slide 15. Am I to presume that the respondent forgot the word "shocked" just after slide 5, grabbed for the synonym "surprised," and then remembered "shocked" by slide 15. Say another respondent uses "surprised" on slides 5 and 15, and "shocked" on 7. If the words are synonyms, why did each respondent switch on exactly the same slide, and why are the groups exactly the same. This pattern would make more sense if we assumed that the two respondents had reversed meanings. Situations similar to this occur throughout all the samples we have examined. I have been unable to find any pair of words which, when freely used, show a distribution that is consistent with the synonymic hypothesis (cf., Prost and Smith, 1975).

We allowed our respondents to give us "free responses," a procedure rarely, if ever, used over the last 40 years: "Free responses in the observer's own words have been less popular in recent years, perhaps because of Woodworth's finding that organizing such free responses into categories yielded considerably higher agreement and accuracy" (Ekman, Friesen and Ellsworth, 1972, p. 45). "In every culture we studied, the observers were given the words for these emotions [6 in all]... and were required to choose one word for each picture..." (Ekman, 1973, p. 206, italics and brackets mine). When an investigator uses a preselected emotional vocabulary, the respondents never get to demonstrate their evaluative criteria, and the investigator cannot retrieve their judgmental distinctions. Of course, when one limits the choices and forces selection, agreements increase. The same methodological criticism applies when an investigator uses scales, or "semantic differentials": "... although we force subjects to rate concepts on scales, there is no restraint upon where they rate..." (Osgood, May and Miron, 1975, p. 22, italics mine).

The assumption underlying the synonymic, restricted choice, and semantic differential strategies is that people are sloppy in their usage and need help to organize their thoughts. We have assumed that people are clear and neat in their usage, but, because words are arbitrary and learned, slippage occurs between individuals.

The M2 respondents saw the movie after they saw the slides. How did they group the slides? There were 80 slides. If the respondents would have used a unique word for each slide they would have given 80 alone responses per person. If the respondents would have guessed the gesture structure, they would have grouped the slides into 16 groups and, therefore, used only 16 different words.

The average number of words per M2 respondent was 38.3 (range of 17 to 59). The average number of alone words was 20.6 (range of 5 to 44). The average number of words used to create groups was 17.9 (range of 12 to 23). The average size of the

groups was 3 slides per word (range of 2.4 to 6.3). Among all the responses the alone words accounted for 27% of the sample. 73% of the responses were groupings, of one sort or another. Of that part of the sample that was grouped, 39% were groupings of truncations from the same gestures (29% of the total sample). Another ca. 10% were groups between gestures with identical commands in different postural modes (i.e., standing "pleased" and sitting "pleased," etc.). Thus, 66% of the sample is accounted for in terms of alone responses, same gesture groupings, and groupings of the same gesture in different postural modes.

For the M1 sample, 32% of the responses were alone responses, 25% were gesture groupings, and ca. 11% were groupings of identical gestures in different postural modes. The average number of words was 42.3 (range 17 to 58). The average number of alone words was 25.4 (range 13 to 46). The average number of group words was 16.9 (range 12 to 24), with an average of 3.4 words per group (range 2.4 to 5.7). There were more words used by the M1 respondents, more alone words, slightly less group words, and slightly more slides per group. The M2 respondents saw the gestures in the slides better than the M1 respondents, in spite of the fact that the M1 respondents had just viewed the gestures. We may conclude that people do not learn gestures as movement patterns and do not see truncated gestures or truncated postures as parts of movement patterns. This raises an enigma.

We might suppose that, although the words are learned, the fundamental comparative visual processes, which lead to the perception of groups, are the same for all the participants. Cross correlation of each slide with every other slide would reveal the grouping functions which the greater number of participants had in common. The results of cross correlation would show whether the majority found a slide to be 1) an alone case, 2) a case correlated with one or another truncation from the same gesture, 3) a case correlated with one or another truncation from a different gesture in the same postural mode, 4) a case correlated with one or another truncation from a gesture having an identical command done in a different postural mode, or 5) a case correlated with one or another truncation from a gesture with a nonidentical command done in a different postural mode. The number of correlations should equal 80 (or 20 for each truncation), providing each slide has a majority correlation with one and only one other slide. However, if any slide has an equal majority with two or more slides the total would be above 80.

For the M2 sample, on the T1 slides, there were 10 cases which the majority saw as alone poses. There were 9 slides which the majority related to other slides from the same gesture, 5 of these to T2 poses, and 3 to T3 poses. Nine of the poses were related to same posture-different gesture slides, with 6 being related to other T1 poses and 3 being related to T2 poses. There were 3 slides correlated with nonidentical ges-

tures in a different postural mode (all T2 cases). The predominant relations, other than alone agreements, were correlations of T1 with T2 poses of the same gesture and T1 with T1 poses of the same posture-different gesture category. This is a direct reflection of the structure of the cone-like array of the gestures. Because gestures start at the neutral action posture, and the cone is constricted in this area, T1 poses look alike, and were, therefore, confused with one another; truncations from the same gesture also look alike, and were, therefore, grouped together, particularly when they were contiguous truncations, like T1 and T2.

For the T2 slides, 10 were alone poses, 8 were related to the same gesture, 3 to different gesture-same posture truncations, 1 to identical gesture-different posture truncations, and 2 to nonidentical gesture-different posture truncations. Of the 8 correlated with the same gesture, 4 were relations between T2 and T3, and 3 were between T2 and T1. The majority agreement for these 7 slides was an average of 8.3 respondents per slide. For T2 truncations, where the differentiation among the gestures is greater than for T1, and the T2's look less alike, the majority of the groupings are for similarities between same gesture T1-T2 truncations and same gesture T2-T3 truncations. When the respondents grouped, they grouped contiguous truncations from the same gesture, poses that looked alike.

For the T3 slides, 11 were alone assessments, 4 were grouped with T2 cases from the same gesture, 3 with T4 cases from the same gesture, 1 with T1 slides from different gesture-same posture poses, and 2 with T3 postures from different posture-nonidentical gesture poses. The relation implied by the groups is between contiguous truncations of the same gesture. The majority average was 8.9 respondents per correlation.

For the 4th truncations, there were 13 alone cases, 5 relations between T4 and T3 of the same gesture, 1 relation between T4 and T2 of the same gesture, 2 relations between T4 and T4 of identical gestures-different posture, and 1 relation between T4 and T4 of the different posture-nonidentical gesture category. Again, the dominant relation is between contiguous truncations for the same gesture. We also begin to see grouping of identical gestures performed in different postural modes.

If people are, as the M2 people clearly are, grouping by gestures, why do they learn so little about the gestures (M1) when they see the movie? The data for majority correlations of the M1 sample show the same patterns as the M2 sample except the number of alone cases increases, the number of cases showing the dominant pattern decreases, and the majority averages decrease.

The average alone agreements for the M2 sample is 5.2 and for the M1 sample 6.3. The movie induced the participants to increase their unique assessments. The average number of slides which were grouped with a target slide by at least one respondent was 28.5 for the M2 sample and 33.6 for the M1 sample. The movie increased the number of slides which the participants, as

a group, evaluated as identical. The average number of agreements per majority group (excluding the alone assessments) was 5.4 for the M2 sample and 4.6 for the M1 sample. The average number of respondents agreeing on a grouping dropped for the M1 sample. The dominant grouping patterns were the same, but they have been weakened by the movie. The respondents who saw the movie saw fewer same-gesture relations, agreed less in their assessments, and saw more relations between different gestures. What did the movie do to produce these patterns of change?

We viewed the slides side-by-side, and in overlay, pairing the slides as the respondents had. When we looked at specific cases from the M2 sample we found there were large areas of image overlap between pairs. Parts of the images did not overlap, such as a moved forearm, or eye blink, but the differences between the overall image outlines were small and usually restricted to a local part. The M1 people broke many of these gross image overlaps, relying more on local area similarities. From this, we reason that the eye analyzes by registering overlappings between more or less virtual, or topographic, images, overlappings triggering memories.

If this assumption is correct, visual memories must be stored as topographic images. It follows that the position of the image in the field of view becomes crucial. If a face is seen on the right, is memorized, and then moves to the left, it would not trigger a memory, because the left side image would not overlap the right side memory. However, to correct for this, animals could center images by using the focal point as their standard. They would see a face, focus on the nose, memorize the centered configuration, and on seeing a face again, shift their focus until they centered on the nose, triggering their memory. If the focal point is the point of reference, columns of cells radiating from the focal center could register transforms for size constancy. Brain areas storing memories would have to maintain a topographic integrity. Once memories were triggered, the topographic organization could be destroyed in order to process cross modal associations (i.e., motor programs, auditory memories, verbal recall, etc.).

As a theory of visual cognition, this model is competent. Cohen, rephrasing Sutherland, states: "... some of the conditions that a theory of visual pattern recognition must fulfil ... the ability to recognize patterns successfully over variations of size, position and brightness; the ability to extract the pattern from a redundant or noisy background; the ability to use context-generated expectancies to identify novel, ambiguous or ill-defined patterns, and the ability to recognize complex patterns at a global level without consciously processing individual details." (1977, p. 164). In terms of brain structure, the model does not postulate what is not there: "Visual radiations from the lateral geniculate nucleus extend to the visual area (occipital lobe) of the cerebral cortex; some fibers also connect to vision areas in the midbrain that are involved with

ocular reflexes." (Schiffman, 1976, p. 175).

Subjects would have to learn two things about a scene: 1) where to look (recognition memory?) and 2) topographic configurations (recall memory?). Scanning a scene would center various parts of the scene for topographic overlay. Learning where to look would be a direct motor association, leading to a "memory" about a scene without the actual identification of any of the forms in the scene (recognition?). Scanning strategies would produce feature-like analyses of scenes, context playing a role in directing, and ordering, attention.

Centering could not be absolutely precise, so absolute overlay could not be crucial; some processes (cross fibers) would have to control local spreading of the pattern, adjusting for centering flaws. If the amount of spreading were under the influence of experience, subjects would "learn" the amount of variability, in one local area or another, which would trigger the same memory pattern. This same process would modulate local displacements of parts and/or minor outline discrepancies.

The M2 subjects processed major body configurations by focusing on the body as a whole. Minor hand and face variations were processed as if they were irrelevant variants of the same thing. The variants were close in form and had edges, and color patterns, which are nearly identical overlays. A spreading concept would explain why the associations between truncations of the same gesture occurred primarily between contiguous truncations and why the early truncations of different gestures (same posture) were equated.

Those who saw the movie first (M1) followed the progression of the gestures to their final consummation, learning, thereby, to focus on the specific parts that differentiated each gesture. In so doing, they saw variations in the face, or hands, which they would otherwise have glossed. For example, standing "pleased" and standing "hate" had the performer folding her arms across her chest. Her face was, in each case, quite differently formed. As noted above, 50% of the M2 respondents grouped these gestures together. For T3 of standing "hate," a majority (5) of the M2 respondents grouped the slide with T1 of standing "pleased," whereas, for the same slide, none of the M1 respondents grouped the slide with T1, or T2, of standing "pleased" (one person did group T3 of "pleased" with T3 of "hate"). From this, we suspect that the M2 people focused on the folded arms, choosing whatever word "folded arms" suggested, while the M1 people, having seen that "folded arms" occurred in two gestures, focused on the face, looking for a "pleased" face or a "hateful" face, but in doing this, for slides T1, T2, and T3, they could not find a pleased or hateful face, because at these early stages the face had not yet achieved its final form, so they assessed the face as they saw it, in a unique way, increasing the alone attributions in their sample. The movie, apparently, not only showed the subjects gestures but "taught" them where to look.

This model has three implications which must be made explicit. First, if topographic images and scanning strategies determine the triggering of memories, the model is subject to immediate and specific tests because we can control both of these factors experimentally. Second, if visual impressions of gestures, learned through experience, are the basic units of body "language," then body language is self referencing, that is, the body can only "talk" about itself. Since vocal language, as an arbitrary set of sound variants, is not self referencing, it can be used to equate sensory impressions and memories. We conclude that this is why vocal language is for each individual, and groups of individuals, a powerful tool; it mediates, simultaneously, between interindividual and intraindividual, intramodal and cross modal percepts. An equational function, however, does not mesh with semantic models, or feature networks, of "meaning."

The interpretation of body language has classically been studied as if it were a problem of discovering "meanings" behind verbal attributions. We suspect that the real problem is discovering how people analyze what they see, how they store visual memories, and how they relate sensory impressions to memories, words acting merely as equational tools, equating visual impressions and memories. If so, words could not be defined by logical feature systems, but would be reflections of the processes carried out by visual comparators. What a surprise if we discover that people have told us precisely what they saw, but we thought they were sloppy, because we never believed them.

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LANGUAGE AND THE MIND-BODY DICHOTOMY

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A clever graffiti artist once scrawled this phrase in a Lake Forest College sidewalk: From The Abstract To The Concrete. Besides taking advantage of the double-entendre on the word Concrete, the anonymous scribbler implied that the concrete words he had written had somehow evolved from his "abstract" thoughts.

The relationship between thought and word has fascinated man since Plato discovered, or rather created one version of, the mind. What is the nature of this relationship? How is thought transformed, if indeed it is, into words? Is language the vehicle for thought, or is thought chauffeured instead by language patterns? Is speech a form of thinking out loud, or is thinking a form of silent speech?

Before these questions can be approached, definitions of language and thought are necessary. Language, as the term is commonly used, can mean anything from speaking, to writing, to thinking, to communicative gestures, to grammar structures. It is most precise and productive, for the purposes of systematic study, to define language as verbal behavior--actual speaking or writing. As for defining thought, interpretations will vary according to different theories of the mind.

The Causal Theory of Expression, employing what has been called a romantic theory of the mind, attempts to answer the question of how language is produced by using an intuitive, it-seems-to-me approach, implying that abstract thoughts or feelings are the causes of concrete, tangible expression (Eaton, 1977). Indeed, thoughts, because they occur directly prior to speech, appear to be causing verbal behavior according to the faulty "post hoc ergo propter hoc" argument. In spite of this faulty logic, Mental theorists, who also assume a causal relationship between thought and word, have attempted to delve into the "mind" hoping to find the key to language production.



Freud bases his model of the mental workings behind language on a pamphlet published by Karl Abel in 1884. Drawing an analogy from Abel's claim that ancient languages evolved from "universal words containing opposites in themselves," Freud describes the similar tendency of thought patterns (such as dreams, metaphors, and images) to "combine contraries into a unity." He concludes that "we use a 'splitting process' to bring non-verbal conceptions into conscious form." For example, the opposing terms Good and Evil would exist in one Good-Evil conglomeration at a pre-verbal, conceptual level, according to Freud's proposal (Johnson, 1977).

Freud is not the only theorist, of course, who has attempted to describe the structure of cognitive processes behind language. L.S. Vygotsky, in his description of the "mental source" of language, outlines specific features of what he calls inner speech. Vygotsky defines inner speech as the language of self-direction or as intra-personal communication. This inner speech has four main qualities, the most prominent of which he calls heavy predication, where the referent or object of thought is absent. Agglutination, the merging of several words into one, is similar to Freud's proposal of combined contraries. The third feature of this internal mode of thought is the semantic short cut, including such mental tricks as omitting the subject of the sentence from thought. The final characteristic of inner speech is the overlap of meanings, where the senses of different words flow into and influence one another. In other words, inner thought patterns follow language patterns, but in an abbreviated, concentrated form (Elsasser and John-Steiner, 1977). Vygotsky even goes so far as to claim that this inner speech enables man to hold ideas clearly in mind as well as "to go far beyond the bounds of his physical capacities." He claims also that thought is connected with language by means of what he calls "multiple transformations, required to unfold inner speech into written or oral speech" (Feldman, 1977).

But just how such mental transformations might operate is a question left unanswered until Chomsky appears on the linguistic scene to expound in detail his theory of transformational grammar. However, while Chomsky does propose quite plausible if complex mental operations, he does not examine the nature of the mind except to say the "deep structures are those innate components of the human mind...far beyond the level of actual consciousness...that enable it to carry out certain kinds of operations" (Thass-Thienemann, 1973). What is the nature of his proposed deep structure, which is given so much responsibility in producing language? Of what special stuff is it made? Where do these deep inner processes take place?

The problem with Chomsky's, Vygotsky's, and Freud's proposals is that in attempting to explain language production, they concentrate exclusively on abstract cognitive states which are accessible only by introspection and cannot, therefore, be confirmed or analyzed. Even if these theories do provide true models, by isolating cognitive underpinnings as the causes of verbal behavior, they bring further inquiry to a stop and divert attention from preceding environmental conditions, whose significance in determining language cannot be denied.

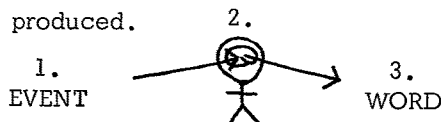
Taking a step beyond the cognitive explanation for language, methodological behaviorists have focused on antecedent events in the environment. Their approach allows for a broader view of language behavior in which mental events are acknowledged but are given no credit for controlling language. By directly contradicting the Mentalistic approach, they open a new road for questioning: How does the environment (as opposed to the private mental world) affect verbal behavior? Since external events in the environment are accessible to observation, this theory allows for a systematic study of language behavior.



The problem with the methodological approach is that, by skipping from environmental event to external verbal behavior, it implies that introspective events play no significant role in the process. These theorists imply that what B.F. Skinner calls the "middle stage in that three-stage sequence of physical-mental-physical" contributes nothing. While Mentalists give the mind total credit for language production, Methodological theorists take the opposite extreme, claiming that scientists need not investigate the mind at all in order to study language behavior. How are thoughts really involved with language? What role does the mind play?

A three-stage version of the model, where the mind serves as the medium linking past environmental contingencies with verbal output, seems most realistic. Benjamin Whorf's theory of Linguistic Relativity stresses particularly the effect of language in the social environment on the way man thinks and, in turn, writes or speaks. A main hypothesis of this theory is that the structure of the language to which a person is exposed and which he habitually uses shapes and channels his thinking, thus influencing the way in which he understands and reacts to the environment (Carroll, 1956). Such a model more accurately portrays the nature of the thought-language relationship as a three-part interaction between the environment, the mind, and

the language produced.



But the questions still remain. Just how do language and mind interact? Of what stuff does the mind consist? In the chain of physical events from environment to the brain to language behavior, where does the subjective experience of thought come in? For over 2000 years, philosophers have insisted on a mind-body split. But how could physiological happenings in the brain bridge across into an independent, non-physical realm of thought, then jump back to the physical world of verbal behavior? Is there a place in the language production model for a mind independent of the physical world?

Fence-sitters who are reluctant to abandon a two-world distinction yet are bothered by the inconsistency in the model at this point, may try to patch up the gap by claiming that the mind, while in a realm of its own, serves merely as a passive observer, and that thoughts are somehow the by-products of actual physiological processes. Thus, the mind would exist on a sort of parallel plane, reflecting and corresponding with the physical brain's activities. It would be, in effect, like having a little man driven around in a mental side-car, watching as the physical processes were ticking away. But even if such a little man were feasible, there would need to be an infinite number of little observers, each inside the head of the previous one, in order to explain conscious experience in this way. How, then, can subjective experiences preceding speech be accounted for? If some sort of correlational thought-realm did exist, would it not be inconsistent, due to its non-physical definition, to claim that it could interact at all with physical events? How could language possibly jump the gap into this separate mental dimension?



The fallacy in this side-car argument lies in viewing mind and body as a dichotomy at all. There is no room for a non-physical mind: MIND IS BODY. Thought IS physiological activity--not a separate function of the brain's processes. According to the Mind-Brain Identity theory, mental experiences such as thoughts are considered to be identical with physical processes and are no longer explained as mysterious phenomena in a dimension of their own (Borst, 1973). In Skinner's terms, the Mind-Brain Identity theory is valid in that "thinking has the dimensions of behavior, not of a fancied inner process which

finds expression in behavior" (Skinner, 1974, p. 118).

Language has traditionally been defined as a bridge between the two supposedly distinct dimensions of "mental" world and "real" world. By re-evaluating this split definition and by incorporating the Identity theory into the model, linguists may finally be able to put a finger on the pulse of the language production process. This theory, by eliminating the gap between Abstract thought and Concrete word, would allow linguists to proceed past their "mental block." But, as do most theories, the Mind-Brain Identity theory conjures up opposition and disturbing questions. Is there no place for a spirit or soul? Is there a fundamental difference between man and animal? Could machines possess consciousness? Adopting the Identity theory would challenge some deeply-rooted beliefs. However, this should not stand in the way of putting often-avoided linguistic "mysteries," (such as the nature of thought), into a more approachable and unmysterious form.

Skinner argues that language and thought should both be examined as behavior, and he continues to say that

feelings and states of mind have enjoyed a commanding lead in the explanation of human behavior....[Yet] the world of the mind is as remote today as it was in Plato's time....Even if the analysis of thinking as behavior is 'defective,' the facts to be treated are nevertheless relatively clear-cut and accessible. (Skinner, 1974, pp. 19, 118).

In turn, Chomsky, who himself admits that his reflections are "somewhat speculative" and "non-technical," objects to studying language in behavioral terms, claiming that "the grip of the empiricist doctrine in the modern period... serves as an impediment, an insurmountable barrier to fruitful inquiry" (Chomsky, 1975, p. 12).

In defense against such objection, Skinner might re-iterate that "thought is action itself--not some mystical cause or precursor of action, or an inaccessible ritual" (Skinner, 1957, p. 18). If thinking can be equated with behavior, then the discrepancy between solvable problems and unsolvable mysteries of language would be eliminated. Even though examining thought as physiological behavior may be complicated, at least Skinner's proposal brings the mystery within reach, proving the behavioral approach to be anything but an impediment to fruitful inquiry.

Physiological research supports a theory of thought-behavior or mind-body identity. Electroencephalograph (EEG) studies done at Tufts College have associated certain thought

processes (such as discrimination, mental arithmetic, and problem solving) with bursts of EEG "Kappa waves," whose specific bio-electrical potentials, recorded by means of electrodes attached to the temporal lobe area of the subject's head, were higher during mental effort (Kennedy, et al., 1966). The correlation established in this experiment, however, still allows room for speculation. Is the mental effort exerted really the same thing as the cerebral activity itself?

Neurosurgeon Wilder Pensfield once accidentally touched on (literally) evidence connecting subjective experience with physiological process. While operating on a fully-conscious woman whose brain was exposed under local anesthesia, Pensfield discovered that stimulating certain areas of the brain evoked simultaneous conscious or psychical reactions in the patient, ranging from re-experiencing previous events in her life to interpreting her present situation (Pensfield, 1966). This evidence agrees with the proposal that the experience of a thought passing through the mind is the same as the physio-chemical impulse that passes through the brain.

These physiological experiments support the conclusion that manipulating the brain is the same as manipulating states of consciousness, feelings, sensations, perceptions, or intellectual processes. However, people seem to become uneasy at the suggestion that more study of physiology is necessary for a fuller insight into language and behavior in general. Ernest Kent, a psychology professor at Chicago Circle, says:

The suggestion that the brain might operate like a machine frequently upsets people. But saying that the brain is a machine does not mean that it is 'only' a machine in the sense of the simple machines of limited ability that we have produced. Rather it is a statement that extends our concept of how a machine operates. (Kent, 1978, p. 11).

Couldn't such a statement extend as well the concept of how the mind and how language processes work? According to a model where thought and language are both examined in physical, behavioral terms, the events in the process flow in smooth interaction. Language must no longer bear the burden of bridging the gap between mental and physical worlds because there is no gap: mental world is physical world. Language need no longer be viewed as a phenomenon separate from the "real" world. And there is no longer a fundamental conflict between Descartes' "cogito ergo sum" and Chomsky's "I speak therefore

I am," but there is, rather, a joining of the two statements in a kind of "cogito-dico ergo sum."

Perhaps the Greeks were on the right trail by combining both reason and word in their term Logos. Obviously, thought and word are not one and the same thing. They are separate events, but the Identity theory removes the mysterious wall between the Abstract-ness of thought and the Concrete-ness of language. By defining both thought and language behaviorally, the Abstract and the Concrete finally meet on the same plane. Put in perspective, language and thought can take their places as interacting yet individual components of the behavioral communication process.

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LANGUAGE AND THE IMAGINATION

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'Imagination' is one of those words that people frequently use without bothering about a definition. Perhaps this is as it should be, since the mental faculty to which the term refers is supposed to be unfettered by logic or reason. When the imagination is at work it produces insights and solutions to problems which stand outside the constraints imposed by rational thought processes. Without the imagination, humans would be forever locked into applying an unchanging list of criteria to an unchanging set of problems. Imaginative thought not only allows us to escape our self-imposed constraints but, more importantly, it permits us to cast aside matters which we once decided were problems but now consider irrelevant or trivial. The play of the imagination is especially evident in the field of linguistics, where new theories about language quickly arise and old ones unceremoniously are dumped. The archiphoneme, the question of overlapping in phonemic theory and the use of distinctive features have now faded as issues. We now involve ourselves with universals, cyclical rules and other, more contemporary themes. We should be thankful that we have our imaginations to fall back upon whenever we approach the limitations of our theories.

Linguists should take more than a passing interest in the imagination because it seems to affect the use of language in significant ways. Grammar, the product of that other mental construct--the reason--is actually rather limited as the comprehensive statement of language even when it is elaborated by pragmatics. Much of the creativity in language stems from the formation of metaphors and other outputs of the imagination. Metaphorizing entails significant abuses of the constraints imposed by semantics and often results in utterances which must be judged 'ill-formed' by our grammars. When someone creates a simple oxymoron like sweet sorrow or thunderous silence, violations of semantic collocations are evident even though there is no loss in meaning or understanding. Thanks to the work of scholars interested in the sociology of lan-

guage, we know that natural speech most often contains slips of the tongue, miscues, conscious and unconscious punning, idioms and metaphors. We are beginning to realize that people use language not only to convey factual information but also to cajole, seduce, mislead, impress and argue. Our first reaction as linguists seems to be to relate all these observations to grammar, as if grammar should be the theoretical model to contain all linguistic phenomena. A similar reaction is noted among second-language teachers who assess progress in their students by equating the language they are teaching to the grammar of that language. The lessons of most second-language texts, even when they are cast in the form of conversational dialogues, are built around grammatical aspects. Child language studies, too, are predominantly cast in terms of how children 'acquire' the grammar of their first languages (see, for example, Menyuk 1977). A different view of child language acquisition would be to observe children's use of language to achieve specific goals of communication. In Di Pietro (1975), such an effort uncovered several communicational strategies, including one which derives from a direct application of a metaphorical process.

If metaphors are closely tied to the imagination it becomes appropriate for a linguist to ask how they are created and what their relationship is to grammar. A consideration of the various mental processes associated with imaginative thinking might help us to find some answers to these questions. For example, metaphorical language relies heavily on visual references.* This reliance is reflected in the stem of the word imagination which derives from the Latin word imago 'image'. Webster's Dictionary (sec. ed., p. 907) calls it, "the act or power of forming mental images of what is not actually present...creating new images or ideas by combining previous experiences." Webster's also lists the adjective imaginal which is rarely used nowadays in English but which is glossed, in part, as the use of rhetorical figures in discourse. The use of visually-oriented verbs like seem and appear in non-figurative language suggests one pathway leading from the imagination to the rational faculties.

In studies of the organization of the human brain, wherein the imagination presumably resides along with the reason, the right hemisphere is credited with artistic functions while the left hemisphere has the

*I am indebted to Mrs. Leonie Cottrill for this observation.

logical ones. Two major linguistic areas, Broca's area and Wernicke's sensory speech center, are both located in the left hemisphere. However significant these locations might be for the production of speech, we also know that language-related functions such as symbol formation, simultaneous comprehension and synthetic thought stem from the right hemisphere. The two hemispheres are interconnected by the corpus callosum through which information flows. Thanks to this bundle of nerve fibers, humans are able to subject the artistic, holistic thoughts of their brains' right hemispheres to the analysis of their logical, intellectual left hemispheres. Cutting the corpus callosum, as is sometimes done in the treatment of patients with severe epilepsy, also has the effect of isolating the perception of shapes, symbols and abstract patterns from the ability to verbalize about these perceptions. In various tests conducted on them, such patients have been able to recognize objects of similar shape by touch but have been unable to discuss this recognition when the objects are excluded from their sight. Although I know of no investigations done on the language, itself, of persons with split brains, I suspect that metaphorical expression would also be curtailed. Cutting off the right hemispherical source of spatial, tactile and other sensory impressions would leave the speech areas of the left hemisphere able to verbalize only those expressions which have already been conventionalized as parts of grammar. If this hypothesis is correct, we should find continued use of expressions like the following: in my view, as I see it, my impression is, I don't hold to that, and let's keep in touch. However, the novel sensory metaphors found in poetry may not be understood (as, for example, when ee cummings writes, "my blood approves" or "kisses are a better fate than wisdom").

In pursuing our studies, we might find that such symptoms are characteristic only of persons who have had their hemispheres cut in maturity. According to the survey on language and brain development supplied by Lenneberg (1967, p. 180-1), the right hemisphere is still able to become the center for language up to the age of 36 months. Even as late as 10 years of age, language functions can be reactivated in the right hemisphere if the speech centers of the left are damaged. From the midteens on, Lenneberg estimates that 97% of humans have language lateralized to the left.

While language is situated in the left hemisphere,

along with logical, mathematical, and analytic functions, it does not follow that an individual will resort first to that hemisphere under all conditions before speaking. Observation of LEM--lateral eye movement--indicates that people vary in the initiation of prelinguistic thought patterns. Trotter (1976, p. 219) suggests a test to be used in determining which hemisphere happens to be functioning dominantly at a given time. When asked a question, people often glance slightly to one side, presumably as a result of which hemisphere has taken the lead in formulating the thought occasioned by the question. Since the visual field of the right eye is controlled by the left hemisphere and that of the left eye by the right one, the eye movement goes in the direction away from the dominating hemisphere. Thus, if you ask your subject a thought-provoking question like, "if you were president, how would you handle inflation?", the subject's LEM should give some indication of how he or she will compose the answer. Presumably, questions which have never been thought of previously would activate the imagination and therefore occasion a different LEM from those which have already occurred to the subject and have been worked over in the left hemisphere. In daydreaming, to cite another example, the imaginative right hemisphere seems to dominate, thereby allowing daydreamers to hear words spoken to them but not understand what is being said. Glossolalia, or 'speaking in tongues', may be yet another manifestation of language use when the imaginative right hemisphere takes over.

Some anthropologists, such as Solomon Katz (cited in Trotter 1976), think it may be possible to conduct cross-cultural studies along the lines of asymmetrical cerebral functions. According to Katz, most cultures associate use of the left hand (reflecting the right hemisphere) with what is symbolic, ritualistic, mystical, mythical, omnipotent, transcendental, supernatural, evil, profane, foreign, and alien. The right hand (and therefore the left hemisphere) is connected with social order, organization, social system, mathematics, and verbalization. Katz observed that the Inuit Eskimos of Frobisher Bay and Lake Harbor have impressive gestalt abilities. They can draw accurate maps and are able to traverse the vast frozen wastes of their polar environment with remarkable ease. In Katz's opinion, their visual acuity reflects right hemisphere thinking, and even shows up in their language which he types as 'highly synthetic'. As in other American Indian tribes, Eskimos prefer to teach

by demonstration rather than by verbal instruction. Katz concludes that various environmental conditions may channel people into a greater or lesser reliance on one or the other hemisphere. Along similar lines, the art historian, Wilhelm Worringer (1953) postulated that hostile settings tend to foster abstract art. When humans feel a lack of control over their environment, they use their art to escape it. Only in harmonious settings do people produce art that tends to the naturalistic. Worringer's thesis has been hotly discussed from many points of view, but never in terms of how empathetic and abstract art may reflect the rise of thought in different hemispheres of the brain.

It was Giambattista Vico who was the first, in 1725, to propose a direct study of the human imagination (see Bergin and Fisch 1968, for an English translation of Vico's Scienza Nuova). Vico's approach to investigating creative thought entailed an analysis of metaphors. Counterposed to the Cartesian rationalism which dominated eighteenth century intellectual life is what Vico called 'poetic logic'. The following quote from Chapter II, Book II (Poetic Wisdom) of Vico's New Science explains the significance of metaphor for the imagination:

All the first tropes are corollaries of this poetic logic. The most luminous and therefore the most necessary and frequent is metaphor. It is most praised when it gives sense and passion to insensate things, in accordance with the metaphysics...by which the first poets attributed to bodies the being of animate substances, with capacities measured by their own, namely sense and passion, and in this way made fables of them. Thus every metaphor so formed is a fable in brief.

Vico goes on to show by analysis of the actual metaphors used, that the ancient Greek classics, the Iliad and the Odyssey, could not have been composed by the same person. Vico also felt that poetic language was more primitive than prose because its form is more musical, symbolic and intuitive. For Vico the imagination plays as much of a part in the shaping of human institutions as the reason and, what is most significant for linguists, the pathway to understanding these institutions is through language.

Recognizing the sensory nature of metaphorical

speech led Vico to theorize that early hominids communicated primarily by mute signs which later became verbalized as metaphors. The theory of gestural origins for human language is convincingly advanced by a number of contemporary scholars. Several of the contributors to Roger Wescott's (1974) excellent anthology on the subject present arguments that language was visually channeled before it came to depend on the auditory channel. For example, Stokoe (1974, p. 61) suggests that "...iconic, indexic, and other natural relations of signs--not to real actions and things, but to their reflexes in private experiences--may go far in accounting for the development of language and the preliminary processing of experience to where the terms nominal and verbal are appropriate...".

Indeed, the traditional definitions of all parts of speech are gestalt-oriented, e.g., noun as a 'person, place or thing', adjective as something 'thrown' at a noun, and verb as an action or a state.

The work of Lieberman (1975) and the successes of the Gardiners in teaching sign language to their chimpanzee Washoe are other bits of evidence that gestural language is a precedent to vocal language. Linguists could profitably investigate the gestural bases of metaphors in many languages, thereby amassing data for psychologists to test.

Other important tasks for linguists include the study of how language is used in various human enterprises. Inventors, poets, and scientists, for example, seem to use language to liberate their thought processes from pre-established conventions while others such as bureaucrats and jurists use it to contain or restrict inventivity (see Di Pietro 1977, for a further discussion of this distinction). The language of successful scientists and inventors contains, at its base, many metaphors and similes which eventually become integrated into an intellectual discourse where they are made to serve analytic and logical thought processes. In linguistics, we have terms like 'tree structure', 'nesting', 'embedding', 'branching', etc., which have become vital to the expounding of certain grammatical theories.

The various features we discover about imaginative language might help us to evaluate different personality types in second-language learning. A start has already been made by the general classification of learners into instrumental versus integrative types (see, for example, Lambert 1973). Since people

differ in their approach to learning a new language, an analysis of how they use their first language might help pedagogues judge when a grammatical rule-ordered approach is to be preferred over a situational, pragmatic one.

In summary, this paper advances the suggestion that the human imagination can be studied formally through an approach that focusses on creative language. Specifically, this approach would entail an investigation of how metaphors are used in various social, cultural and psychological contexts. Thanks to the scientific work being done on the location of specific thought processes in the brain, we can conceive of the imagination as a constellation of right-hemisphere functions. The results of a study of imaginative language may explain several matters which now seem unconnected, such as the association of metaphor with the senses and how gestural language became integrated into vocal language. The choice of abstract art over naturalistic art in various cultures may also be better understood by analyzing language-specific metaphors. Last, but certainly not least, an application might be found in second-language teaching. The keynote of the many discoveries to come in considering the linguistic output of both halves of the brain was perhaps best sounded by the experimental psychologist Jerome Bruner: "reaching for knowledge with the right hand is science. Yet to say only that much of science is to overlook one of its excitements, for the great hypothesis are gifts carried in the left" (quoted in Trotter, 1976, p. 223).

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Attention Must Be Paid: Italic Types
and Chapman's Homer

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Linguists who examine poetry frequently work with various functions of poetic language. One such aspect to receive attention is the expressive or emotive function, frequently signalled by modifications in phonology, as Jakobson, for example, has demonstrated for Slavic verse (Jakobson 1960). However, there are other ways for an author or work to signal such a language function: one such way is the use of italic type. The use of italic type to serve something in addition to a phatic function is by no means recent; we find it, for example, in the Renaissance translations of Homer by George Chapman. Chapman's use of italic type is especially worth our attention, because in at least one instance the type face signals the reader to a deeper understanding of what Chapman felt to be Homer's allegory. And Chapman's theory of Homer's allegory rested firmly upon his notions of the role of the translator and the nature of poetic language. An examination of Chapman's italics reveals new structures of meaning within the poems themselves, expands our understanding of the devices available to a poet and translator, and reminds us of the complicated relationships between theories of discourse and style during the explosive period of language change in the English Renaissance.

English readers in the late sixteenth and early seventeenth centuries brought with them certain expectations when they picked up a work such as Chapman's Homer. The sixteenth century had seen a number of works rejecting poetry or defending it; numerous rhetorics had attempted to define the nature of prose or of poetic language, and the styles appropriate to each. Puttenham's 1589 discussion is particularly interesting to current theorists, both for his analyses of function and his terminology. He first enumerated the various functions of the different genres of poetry, and then discussed the appropriate rhetorical ornaments poetry could use. Ornament meant for the ear alone he called Energia; that for the mind was Energia. And he categorized as well the various rhetorical figures. Auricular or orthographical figures were meant for the ear alone

and were appropriate to be used only by the poet; sensible */sic/* or syntactical figures were used to develop the conceit alone, and were appropriate to both poet and orator. Sententious figures applied to both ear and conceit; extending over segments of discourse larger than the clause, they were appropriate to the orator. And it is to these sententiae, as italicized by George Chapman, that we will return, to see how he uses them as a meaningful set of structures within his poems.

A Renaissance reader was aware of the controversies about the nature and justification of poetry; he was cognizant also, to judge by the prefaces to the many works in the flourishing trade in translations, of the sorts of questions a translator faced. Were the translations to be word for word, or were they to recreate, to reclothe the thought of the original writer? And in an age revelling in the Inkhorn controversy, which words could the translator use, and how un-English could they be? More, the reader expected to be able to recognize different modes or genres of poetry, such as the Epic, by language usage, and he held certain expectations about kinds of style: was a writer, for example, to use the curt brevity of a Seneca or the flowing looseness of a Cicero? (See Hall 1974, Williamson 1961). And where did the functions of poetry overlap with the specialized discourse of allegory? Nashe, for example, had called poetry "a more hidden and divine kinde of Philosophie enwrapped in blinde Fables and dark stories"; Boccacio had stated that poetry was composed "as under a veil" and that veil, through paradox, revealed truth (See Murrin 1969:10-15).

Chapman himself took an uncompromising if complex stand on these issues. As a translator, he felt his role was to reveal the glories of Homer to an English public, by recreating Homer for that public -- no word for word translation for him. He chose the high style as appropriate for the translation of an heroic epic, selected curt, enigmatic, near satyric expression for his expanded metaphors, and embroidered the whole with complex figures of ornamentation. In his prefaces and dedicatory sonnets (see Bartlett 1941, especially the Introduction; cf. Nicoll 1956 Introductions), he consistently defended his obscure phrasing, unfamiliar usage, and dark, frequently metonymic conceits as being meant for the chosen few. This small group of readers included those who could extend their understanding to perceive the allegory veiled yet revealed by his words, to apprehend the divine furor inspiring Homer, and to appreciate the philosophy encapsulated by the

language of poetry. Not content with reiterating these claims, this defense of his own use of language in his prefaces and extended marginal glosses, he exemplified and extended his attitudes by the very type face in which his notes, his prefaces, his glosses and, especially, his *sententiae* were set.

It was customary in the Renaissance to use one type face for the body of a text, and other faces (or sizes) to emphasize differences. Sometimes one set off proper names, or added marginal glosses in a different type and size to expand commentary, explain a word or an etymology, point out a crucial turn of thought, identify a place or person. Types of different faces or sizes were used for the dedication, preface, argument, title or running title. Especially quotable phrases, *sententiae* incorporating moral doctrine, were often pointed out to the reader within the text by punctuation or a shift in type face, or both. Any work deemed of moral or educational value utilized one, two or more of these devices: Chapman used them all simultaneously. In an age of gnomie pointing, of italicized *sententiae*, of special attention drawn to learned notes, Chapman's Homer is on the one hand, one of the most elaborately laid-out works and, on the other, one of the most puzzling. Something jars the eye, the ear to extra attention. His italicized *sententiae* are a working and meaningful substructure of his translations. Here he moved the use of italic type from a phatic to an expressive function within the context of his theories of allegory and poetry, playing with and on the expectations of the reader.

In a recent article on "Linguistics and Semiotics," Paul Garvin comments that the function of signs is not the same as their use; he notes the necessity of distinguishing between ultimate and immediate functions: the "immediately observable role of a certain mode of sign communication" can be opposed to its "'deeper' significance." More, "the same function can be carried ...by more than one system" (Garvin 1977:105). The remainder of this discussion will focus on whether Chapman's italicized *sententiae* play a functional role other than the phatic, and whether they have both immediate and ultimate functions. Examples will be limited to the Odyssey, part two of The Whole Works of Homer Prince of Poets as translated by Chapman and printed by Richard Field for Nathaniel Butter (Nicol 1956).

Exclusive of ornamented capitals, colophons, borders and the like, four main type faces of differing sizes are used in the printed text of Chapman's Homer:

roman is used for the body of the main text and alternates with italic for the prefatory matter; a roman Hebrew and a roman Greek type are used in the marginal and end glosses. Italics are used for the title, running title, subtitles, as part of the prefatory material and dedicatory poems, and for the marginal and end gloss text. Within the body of the poem, italic is used first, to set the short poems, or "Arguments," which precede and summarize each of the twenty-four Books, and secondly, to set what I believe to be an innovation by Chapman, a second "Argument." This last is set as a quatrain which calls attention to the "deeper meaning" of each book; each quatrain begins with one of the letters of the Greek alphabet in sequence, and expands upon it. Italic is used also for the two Songs within the text, and for the fifty-two sententiae.

It was standard for English books of the period to use italic type in one or more contexts. What must concern us here is: was the especially heavy use of italic here by accident or design? And secondly, by whose hand: printer/compositor or author. These are neither trivial nor easy questions to answer, especially in terms of contemporary printing practice. One of the most famous printer's manuals of the time, Moxon's Mechanick Exercises of 1683 states that the good Compositor reads copy "so he may get himself into the meaning of the Author, and consequently considers how to order his Work the better both in the Title Page, and in the matter of the Book: As how to make his Indenting, Pointing, Breaking, Italicking, &c. the better sympathize with the Authors Genius, and also with the capacity of the Reader" (Moxon 1962: 212).

A quick check of little-used letters for a number of pages shows that the printer did not merely run out of a letter, forcing him to shift fonts. Moreover, the placement of italics on a page and within the various Books varies widely. The elaborateness of the italic apparatus also argues against its use as accidental. We move then to the printer's practice. Richard Field was a prolific printer and much called upon to set sermons, translations from the classics, and poems such as Shakespeare's Venus and Adonis. He published Chapman's first poetic work of this type, the heavily allegorical Shadow of Night. During the years surrounding his printing of Chapman's Homer, Field printed roughly sixty other volumes. I have been able to check fifty-four of these, either in the original or on microfilm: he uses the same ornaments and borders, Greek and Latin, roman and italic types, but in no work is there as

as elaborate a lay-out as the one for Chapman's Homer. An examination of other long poems, epics and translations of the same period, by other authors and set by other printers, gives similar results, as does a sampling of sermons, treatises, political, astronomical, geographical or grammatical works. Each of these genres would be expected to use italic, and all do, but only Chapman's Homer, of the works I have seen, uses italic so generously and so elaborately. Nor did Chapman make so heavy a use of italic in his other works, regardless of either their genre or their printer, although his poetic works generally show some use. For example, the sestiams of Hero and Leander by Christopher Marlowe use italic type to set off proper names; the completion by Chapman adds the use of italics to set off sententiae as well.

And here, having established the elaborate italic apparatus in the Homer as atypical both of poet and of printer, we may pause to examine the sententiae themselves. For they are puzzling. Chapman pointed with brackets his successful uses of triple rime, and used punctuation heavily and deliberately. His revisions are generally thought to be fairly careful. It seems likely that he, not accident or his printer, chose the line or lines within the text to receive the spotlight of italic type. Yet, taken from their immediate context, the sententiae chosen for italicization are often eminently unquotable, or at least, undistinguished, as with an example from Book Six: "To cold bath-Bathers, hurtfull is the wind." On the surface, at least, such a line seems an inane choice for italicization, especially in a long poem chock-full of beautiful, far more quotable lines. It is hard to believe that the poet chosen to complete Marlowe's work, and who is thought by many to have been the "rival" mentioned in Shakespeare's sonnets, would deliberately commit gaucherie, regardless of the other faults of his style. Unless, however, Chapman meant to do more with his italics than merely to call the reader's attention to lines containing pithy or enigmatic statements of moral truth.

Within the twenty-four Books of Chapman's translation of the Odyssey are fifty-two italicized sententiae ranging from a half-line to four lines in length. At first glance they appear scattered randomly across the Books, with clusters in Books Sixteen through Nineteen and Twenty-Two. Only a brief summary of a much longer study of these sententiae can be included here. Each of the sententiae sheds some light on the character and actions of Ulysses, his growing wisdom, and the role of fate, the gods, or God in guiding him safely home, to

the ironic final feast, in which the banqueters are slain and the beggar regains his throne. For example, the *sententiae* italicized in Books One through Six are not all spoken by Ulysses, but all prefigure the return of the true king whose boldness and wisdom is stressed in *sententiae* through Book Fifteen. The *sententiae* in Book Sixteen deal with the disguises that Fate and the gods assume; all nine of those in Book Seventeen reflect the irony inherent in the feast scene. Those in Book Nineteen contrast the various excesses of emotion with the golden mean suggested by the hero; the *sententiae* in the concluding books deal with mercy, justice, and God's providence in meting them out through Ulysses.

In an early marginal gloss to Book One, Chapman stresses that the allegory of the *Odyssey* is the safe arrival home of the worthy man "whose haven is heaven and the next life, to which this life is but a sea in continual...vexation" (Nicoll 1951: 14). This allegory is consistent with the efforts of an age to allegorize Homer (Allen 1971: 89 ff.); it is continually underscored by Chapman's italicized *sententiae*. It seems highly probable, then, that the italics used to set off the *sententiae* in Chapman's *Homer* have not only the immediate function of attracting attention, but an ultimate one as well: to extend the reader's understanding of poetic allegory through heightened emotive response. It would also suggest that the longer poetic works of this period may well furnish linguists with a valuable testing ground for hypotheses about poetic language and the theories of signs.

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HIERARCHIES OF SIGNS IN NONVERBAL SEMIOSIS

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In the most basic sense, communication involves the transmission of information regarding the perception of similarities and differences. Distinctions and disjunctions in formation are generically intended to cue the perception of similarities and differences in meaning. Meaningfulness is an aspect of a sign system in its totality, and nearly any formative distinction may be meaningful in some sense in a given code, and often in several senses simultaneously.

The way each communicative system does this is both code-specific and culture-specific. Meaningful distinctions in formation in one system may be non-significant in another code of the same type, or may be significant in different ways. It is evidently the case that any sign system is built upon a design principle of relational invariance, and it is the task of any analysis to recognize and account for patterns of invariance in variation, and vice-versa.

In the semiotic task of illuminating more precisely the place of language in communication, the study of nonverbal communication - and in particular the study of visual and architectonic communication - has acquired today a fundamental urgency and importance. The study of visual communication has been and still remains an enormously difficult task, for not only must the analyst deal with complexities of organization which find no direct correlates in nonvisual sign systems, but he must also carry forward the necessary extrication of the study of visual communication from its recent verbocentric captivity without falling into any number of opposite extremes.(1)

We cannot adequately understand any form of communication in vacuo, for the various kinds of sign systems evolved by humans have been designed from the outset to function in concert with each other in deictically-integrated ways, and it becomes increasingly clear that any semiotic code incorporates formative elements whose significance is ambiguous without indexical correlation with sign formations in other codes.(2)

Human communication is characteristically multimodal, and in the ongoing semiotic bricolage of daily life we orchestrate and combine anything and everything at our disposal to create a significant world, or simply to get a message across. A semiotics of communicative events in their multimodal totality

has yet to be born, and it will not come about until we have a more profound and holistic understanding of the nature, organization and operant behaviors of sign systems other than verbal language.

Attempts to bring this about through the scientific and more or less literal superimposition of design features postulated for verbal language upon other sign systems has, by and large, been a failure. While it is true that much has been learned by such a procedure, the ultimate expected illumination has tended to be rather dim and fleeting in comparison to the energies expended, (3) or, as more often has happened, the mute stones have remained mute.

This silence has induced some to claim that it is only because the things, events and relationships in an environment can be given lexical labels that we can recognize what they are - which is patently false.(4) As Michael Silverstein has patiently reminded us, speech acts are necessarily co-occurrent with events in distinct signalling media which only in concert make up full-scale communicative events.(5)

Despite its truly unique powers and affordances, verbal language is not an active figure against a passive or static ground, but is at all times a component instrument in the complex multimodal orchestration of meaning. This becomes increasingly clear the more we understand the nature and organization of communicative systems other than verbal language, and the more we understand the operant systemic functioning of human cognition-and-perception itself, and the unique globality of human intelligence. If the normal semiotic transmutations of daily life are possible, they are possible only because our nonlinguistic signs partake of the same systemic complexity as verbal language itself, as Roman Jakobson poignantly noted a decade ago.(6)

One area of research which has grown up over the past decade uniquely promises to clarify significantly the place of verbal language in communication, and which has already served to collaterally illuminate certain features of the organization of linguistic systems themselves is the area of architectonic analysis, concerned with the study of the system of the built environment. The built environment - the architectonic code - incorporates the entire set of place-making orderings whereby individuals and groups construct and communicate a conceptual world through the use of palpable distinctions in formation addressed to the visual channel, to be decoded spatiokinetically over time.

The scope of architectonics has come to be the entire range of such orderings, including all manner of space and place-making activities realized both artifactually and somatically - realized, in other words, through direct and indirect bodily instrumentality.

In an architectonic perspective, a room, a sewing machine in the corner of the room, a tree outside the window, and a mountain on the horizon - however else the latter three may function - may serve as sign formations in an ordered and culture-specific system of architectonic signs. Moreover, even within the same code formations may be as permanent as a pyramid or as momentary as a tent, a float in a parade, or a circle of elders assembling together in a meadow once a month.

Our traditional confusions on this point have stemmed from a misconstrual of the nature of the architectonic signing medium itself, for in evident contrast to the situation with verbal language, where not only is the acoustic medium itself relatively homogeneous, but (as is now increasingly clear),⁽⁷⁾ linguistic signals are processed by the brain in ways distinctly different from nonlinguistic acoustic signals, the architectonic code is realized in what seems to be an impossibly complex hybrid of media. It would seem that the built environment can employ anything from frozen blocks of water in the Arctic to aggregates of steel and glass, from bamboo and animal skins to mere clearings of a forest floor, or mere appropriations of a given landscape.

Moreover, the architectonic code is realized in ways which often appear to render the occurrence of built formations optional, as for example among the !Kung:

It takes the women only 3/4 of an hour to build their shelters, but half the time at least the women's whim is not to build shelters at all. In this case, they sometimes put up two sticks to symbolize the entrance of the shelters so that the family may orient itself as to which side is the man's and which the women's side of the fire. Sometimes they do not bother with the sticks.⁽⁸⁾

But it becomes clear that whether we are dealing with bamboo, concrete, ice, lines in the sand, places outlined by spotlights, or the infrastructural positioning of bodies in a lecture hall, we are dealing with geometric and material distinctions per se, which by address to the visual channel are intended to cue the perception of distinctions in meaning, in culture-specific and code-specific ways. The architectonic code is a system of relationships manifested in material formation, and the medium of a given code is normally a multi-dimensional spatiotemporal matrix of shapes, relative sizes, colors, textures and materials - in other words, anything a society chooses to draw upon from the entire set of material resources potentially offered by the planetary biosphere - including our own and other bodies.

The component units of an architectonic code defined by contrasts in geometrical and material formation are not all meaningful in the same way. It has become clear in architectonic analysis over the past decade that any architectonic code comprises a hierarchically-ordered system of sign-formations of several characteristic types. The results of our research program in architectonic analysis carried out since 1970 at Yale and MIT have been published in detail elsewhere; the present paper will concern itself with some of the more salient features of architectonic semiosis which relate to collateral problems of linguistic organization.(9)

In any architectonic code, the number of minimal significative units is limited, and it is out of the syntagmatic and paradigmatic interaction of such elements that the transfinite variety of architectonic formations in a built environment arises. Architectonic codes reveal the presence of several types of sign-formations related to each other as hierarchically-ordered sets. The largest directly significant unit to be encoded as such in a given system, the SPACE-CELL, is itself composed of units which are primarily meaningful in a systemic sense, and which serve to discriminate one cell from another.(Figure 1)

These units, or FORMS, as they have come to be termed, consist themselves of copresent spatial distinctive FEATURES of three basic types: topological, planar and geometric. Space-cells enter into tridimensional aggregates, called MATRICES which, as sign-formations, comprise patterns or diagrams of cellular aggregation rather than larger cellular entities as such, although it has become clear that in any code many such matrices become temporarily fixed in characteristic association.(Figure 2) This is additionally subject, normally, to diachronic and diatopic variation.

Architectonic forms, while primarily significant in a systemic or sense-discriminative sense, may also serve directly-significant or sense-determinative functions under certain conditions in given codes. Thus, while the particular geometric configuration of a wall, for example, has a primary function in contributing to the contrastive discrimination of one cell from another, it may also, by virtue its morphological properties, carry with it some form of direct signification. Moreover, this may be over and above its material realization with respect to color, texture, relative size, or medium, which themselves may be both directly and indirectly significant.

In this regard, architectonic and linguistic systems may be seen as sharing a certain correlativity with respect to systemic organization, while contrasting most sharply with respect to the nature of formative units themselves. There is no longer any question that both systems are designed according to a principle of double articulation.

But the architectonic code reveals a unique systemic feature not reflected except by weak approximation in non-visual systems such as verbal language, which concerns the complexity of its material component, induced by the degree of potential variation in the material composition and realization of formal or geometric structural relations. Whereas in an architectonic code the entire range of colors, textures, modularities of size and proportion as well as specific media employed serves a primarily sense-discriminative function in the realization of formal or geometric units, the material parameters of a built environment offer a second major site for direct signification, specific to a given code.

The extraordinary range of these significative possibilities - the code-specific 'symbolisms' of color composition, textural patterning, modularities of relative size, the associative constraints in the use of given materials - has no full analogue in verbal language: relatively speaking, the systemic position of linguistic phonesthesia confers a weaker contribution to verbal meaning. These differences are principally due to profound differences in medium and mode of perceptual address.

Hence, while it has become increasingly clear that as a system, the linguistic code is designed in ways which to a certain extent are correlative to the formative processes of architectonic systems, the multidimensional complexities of the architectonic code, manifest both spatially and temporally, are comparatively unique and extraordinary.

It is now also clear that in terms of functionality, both codes reveal correlative properties of organization. Architectonic formations (like linguistic formations) are inherently multifunctional in the sense that a given construct reveals, in code-specific ways, a variety of orientations upon the several component parts of a transmission, one or another of which may be in dominance at a given time over others which may be copresent. A building is no more a work of 'art' than is a speech-act except insofar as a given formation may manifest a dominance of focus upon the formation itself, exactly paralleling the 'poetic' function of a given linguistic act. (Figure 3)

The question of architectonic meaning or function has not been resolved through the traditional misconstrual of 'architecture' as 'art,' craft, engineering, theatre, housing, frozen music, or some ingeniously clever way of writing texts in three dimensions. The study of the built environment through the offices of art or architectural history has more often than not focussed upon only 2 or 3 of its functions - notably its contextually-referential or usage function, its aesthetic function, or its expressive function - and this way of dividing up the pie has been confounded with time and culture-

specific (and class-specific) notions of what buildings ought to do and how they ought to do it. The result has been a misconstrual of architectonic conation, expression, usage, territoriality, and meta-systemic or allusory functions.

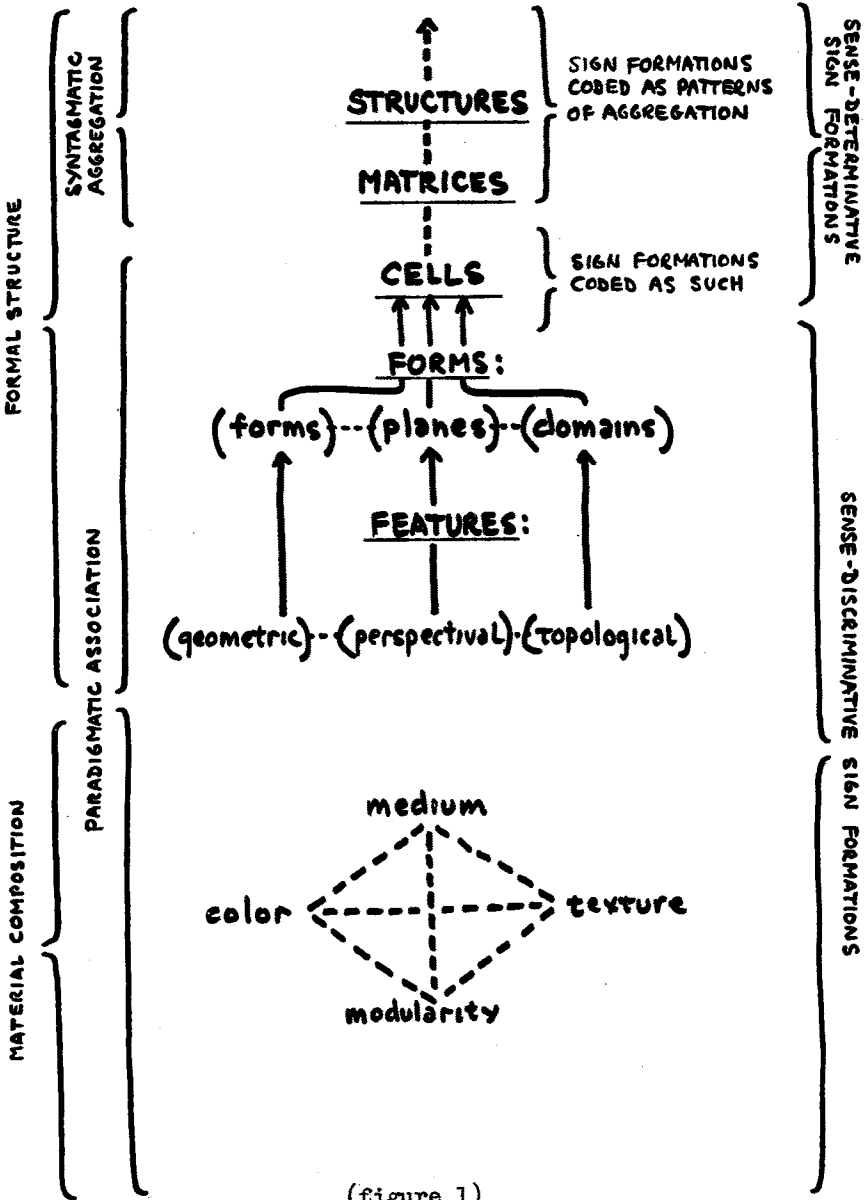
The correlation of the functions of architectonic signs with characteristically dominant orientations upon the various copresent components in a transmission was proposed in rough outline as early as 1938 by the astute Czech theoretician Mukařovský,⁽¹⁰⁾ but it has not been until the present decade that the growth of architectonic analysis has begun to match his initial insights. It is now evident that the functional horizons of architectonic formations correlate systematically with the picture of linguistic multifunctionality articulated by Jakobson two decades later in his Presidential Address to the 1956 Meetings of the Linguistic Society of America.⁽¹¹⁾ Such a framework now also finds salient application to other semiotic systems as well.⁽¹²⁾

The picture of architectonic meaning is augmented by a unique property of the code, namely the relative permanence of its broadcast. Clearly, if a signal remains perceptually available, it becomes intersubjective property to many potential addressers and addressees. While some architectonic signals are more transitory than others in a given code, the range of relative permanence is in complementary contrast to the ephemerality of linguistic (or gestural) transmission. These contrastive properties confer unique and different communicative advantages to each system. Verbal language and built environments interact in dynamic synchrony in complementary and supplementary fashion, as differentially-sustained components in the ongoing orchestration of meaning in daily life.

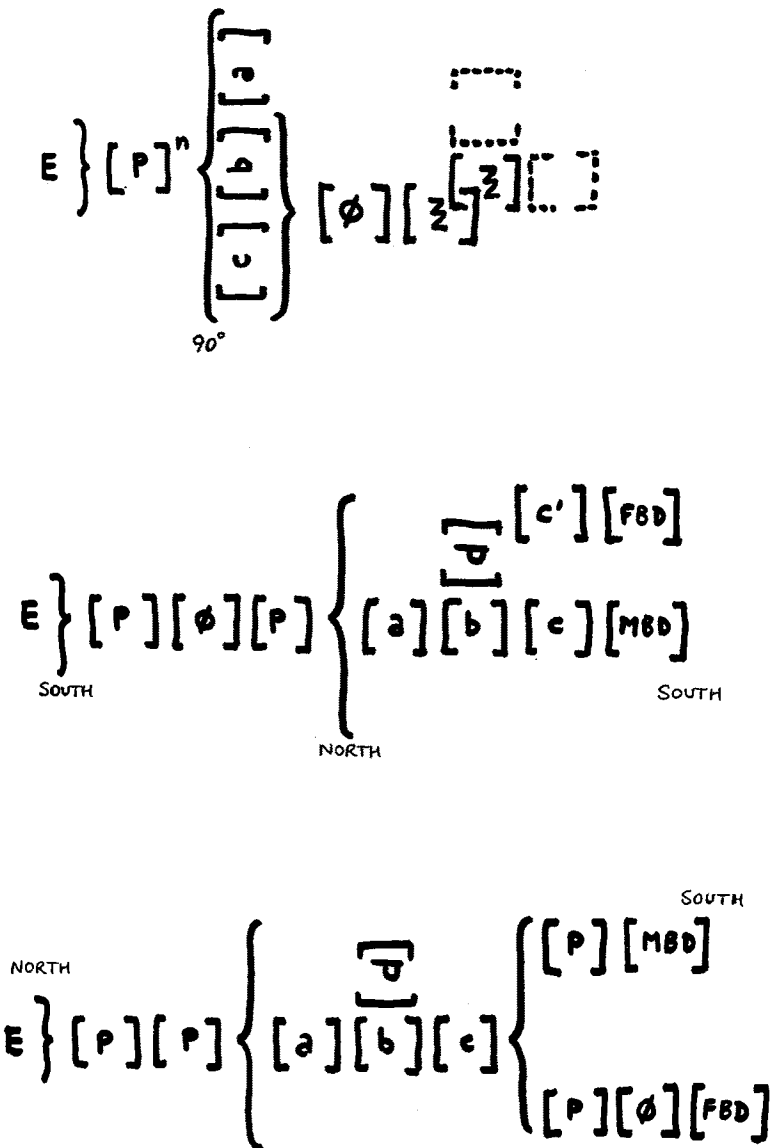
The world that language builds is built in necessary partnership with and in relationship to the relative object-permanence that architectonic sign-formations confer. By the same token, verbal language confers upon the built environment temporal variation in invariance. Whatever the two codes share with respect to correlative processes of formation and transmission, they share by virtue of their both being panhuman sign systems with partly-overlapping and mutually-implicative functions. The more we understand the particular parameters of organization of sign systems other than verbal language, the less will we be inclined to view the position of any one as an active figure against a static ground. This is not to deny the necessary operational paradox that any code can be employed in communication as a provisional metalanguage. Concomitantly, we shall be in a clearer position to understand how and why each copresent system provides its own particularly powerful perspective on the totalities of human experience, and the ways in which each such perspective necessarily implicates all others.

NOTES

- (1) For all its profundity of insight, for example, the work of Rudolf Arnheim in the visual realm lapses at times into the opposite extreme. See R.Arnheim, Visual Thinking, Berkeley, 1971, pp. 226-253.
- (2) On the subject of deictic integration among codes, see the paper "Multimodal Communication," to be delivered by the writer at the meetings of the Semiotic Society of America, Providence, October 1978 (Proceedings of).
- (3) See for example K.Pike, "Towards a Theory of the Structure of Human Behavior," in D.Hymes, ed., Language in Culture & Society, New York, 1964, pp. 54-61.
- (4) Edmund Leach, Culture & Communication, Cambridge, 1976, p.33 f.
- (5) Michael Silverstein, "Shifters, Linguistic Categories & Cultural Description," in K.Basso & H.Selby, eds., Meaning in Anthropology, Albuquerque, 1976, pp. 11-56.
- (6) Roman Jakobson, "Linguistics in Relation to Other Sciences," in R.Jakobson, Selected Writings (II), The Hague, 1971, pp. 655-691.
- (7) On the most recent evidence for lateralization, see now R.Jakobson & L.Waugh, The Sound Shape of Language, Bloomington, Indiana, 1979 (forthcoming), Chapter I.
- (8) L.Marshall, "!'Kung Bushman Bands," in Africa, Vol. 30, No. 4, 1960, p.342.
- (9) See D.Preziosi, The Semiotics of the Built Environment, Bloomington: Indiana University Press Series in Advances in Semiotics (1978); id., Architecture, Language and Meaning, The Hague, Mouton, 1979 (forthcoming).
- (10) J.Mukařovský, "On the Problem of Functions in Architecture," in J.Burbank & P.Steiner, eds., Structure, Sign & Function: Selected Essays of Jan Mukařovský, New Haven, 1978, pp. 236 ff.(written 1938).
- (11) R.Jakobson, "Metalanguage as a Linguistic Problem," Presidential Address to the L.S.A., December, 1956; id., "Linguistics & Poetics," in T.Sebeok, ed., Style in Language, Bloomington, Indiana, 1960, pp. 350-377.
- (12) Notably in photography and film; to be discussed in the paper noted above, n.(2), by the present writer. See also D.Preziosi, "The Parameters of the Architectonic Code," Ars Semeiotica, Vol.4, October, 1978.



(figure 1)
THE HIERARCHY OF ARCHITECTONIC SIGNS
(D.Preziosi, Architecture, Language & Meaning,
The Hague, 1979)



(figure 2)

CELL MATRIXING : COMPARATIVE

(D.Preziosi, The Semiotics of the Built Environment,
Bloomington, 1978)

ARCHITECTONIC SEMIOSIS $\longleftrightarrow$ LINGUISTIC SEMIOSIS

<u>focus</u>	:	<u>function</u>	::	<u>focus</u>	:	<u>function</u>
BEHAVIORAL CONTEXT	:	USAGE	::	CONTEXT	:	REFERENTIAL
FORMATION ITSELF	:	AESTHETK	::	MESSAGE	:	POETIC
CODE	:	ALLUSORY	::	CODE	:	METALINGUISTIC
CONTACT	:	TERRITORIAL	::	CONTACT	:	PHATIC
ADDRESSER	:	EXPRESSIVE	::	SPEAKER	:	EMOTIVE
ADDRESSEE	:	EXHORTATORY	::	HEARER	:	CONATIVE

(figure 3)

ISOFUNCTIONAL CORRELATIVITIES

(D.Preziosi, The Semiotics of the Built Environment,
Bloomington, 1978)

VI

GRAMMAR AND COMPARISON

TRANSITIVITY AND VOICE IN TZUTUJIL CLAUSE ROOTS

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I. PROBLEM

The domain of transitivity and voice in Tzutujil is the clause root which is the structure that fills the nucleus of a clause. This study includes only the nucleus of the independent declarative clause, and furthermore, only those nonreflexive clause root types which present some major features of transitivity and voice. A display of these clause root types is seen in Figure 1. The numbers in the figure refer to clause root formulas (Section VII), to verb formulas (Section VIII), and to illustrations of each structure (Section X). A check (✓) refers to a very infrequently occurring structure which we have not illustrated in this paper; a dash (--) indicates that such a form does not occur in the language.

VOICE →	Basic	Passive (U Focus)	Actor/Item Emphasis	Actor Empha- sis, U Focus	Action Emphasis
TRANSITIVITY ↓					
Bitransitive	1	6	8	✓	✓
Transitive	2	7	9	10	11
Bi-intransitive	3	--	--	--	--
Intransitive	4	--	--	--	--
Descriptive	5	--	12	--	--
ETC.	?				

Independent Declarative Active Nonreflexive Clause Roots of Tzutujil

Figure 1.

Most clause roots have only one obligatory element: the verb (expandable to verb phrase) filling the predicate slot. However, we give examples of two nonverbal clause root types which include no verb at all. These are the descriptive types of the fifth row in Figure 1.

TRANSITIVITY has to do primarily with the number and kinds of participants which are optionally involved in a given action or state. VOICE has to do with relative degrees of attention given to participants and their activity or state.

The two parameters of transitivity and voice are essential in disambiguating three different homophonous verbs two of which have an identical sequence of morphemes as seen in Figure 2. Note that

Contrastive Meaning:	Identical Morpheme Sequence:
1. 'It is you who scolds someone.'	$\begin{array}{ccccccc} n- & at- & \check{c}^? & oli & -n & -i \\ \hline & \text{continuative-you-scold} & & & & \\ & -actor \text{ emphasis-class} & & & & \end{array}$
2. 'It is he who scolds you.'	
	Homophonous Sequence with One Morpheme Difference:
3. 'You are always scolding.'	$\begin{array}{ccccccc} n- & at- & \check{c}^? & oli & -n & -i \\ \hline & & & & -action & \\ & & & & emphasis & \end{array}$

Three Homophonous Verbs

Figure 2

the prefix at- means 'you'. In the verb having the first meaning, 'you' is actor with emphasis. In the verb with the third meaning, 'you' is also actor, but not with emphasis, rather the action is emphasized as an attribute of the actor. In the verb with the second meaning, 'you' is the undergoer (one who is acted upon) and is in focus, but the emphasis is on the actor which is not signaled within the verb. These three different verbs can be identified by the specific participant tagmemes (free forms) in the clause root with which each may occur, thus identifying the role relationships of each of the verbal affixes. The fuller analysis of these three verbs is to be seen at the end of Section III and in Formulas and Illustrations 9, 10, and 11. (Also see Figure 1.)

II. TRANSITIVITY

We treat first the transitivity parameter as seen in the basic voice type in the first column of Figure 1. The clause root types included in the data of this study have from two to four immediate constituents; each immediate constituent is a tagmeme. The predicate is the nuclear tagmeme of all in the first column of Figure 1 except the descriptive type. Participant tagmemes occurring in clause roots with the predicate have the slots of subject (S), and up to two adjuncts (Ad); the roles of these tagmemes may be either actor (A), undergoer (U), or scope (Sc). The central meaning of actor is the person or item that does the action of the verb; undergoer is the person or item that undergoes the action of

the verb; scope is the person or item to or from which the action is directed.¹ Transitivity is the correlation of the specific list of fillers of the nucleus of the verb (verb root or stem) within the predicate, with the number and kinds of participant tagmemes (free forms) with which that predicate may occur. This correlation is a cohesion feature of the total clause root.

A. Clause Roots in Relation to Verb Roots

In Tzutujil a bitransitive clause root has the potential of actor, undergoer and scope tagmemes accompanying its predicate. (Each clause root tagmeme is a free form--either word or phrase.) A transitive clause root has the potential of actor and undergoer tagmemes with its predicate. The bi-intransitive clause root has the potential of actor and scope tagmemes with its predicate. An intransitive clause root has the potential of only an actor with its predicate. The descriptive clause root has neither a predicate nor an actor tagmeme, but rather the tagmemes of Subject-as-Item and Complement-as-Characteristic of the Subject (COS). Transitivity is a cohesion feature of each of these clause roots. Figure 3 presents some of the contrastive features of Tzutujil clause roots.

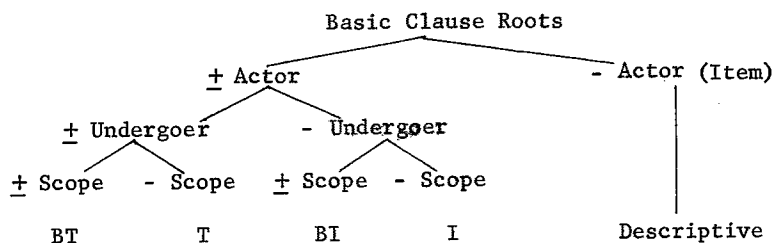


Figure 3

Intransitive verb roots (and stems) occur within the predicate of the Intransitive Clause Root. (See those Formulas and the Illustration which are numbered 4 in Sections VII, VIII, and X.) Some intransitive verb roots are war 'sleep', koc? 'lie down', mul 'pile up', pax 'fall down', bin 'walk', kaw 'lie face up', cal 'become crooked', xup 'lie face down', oq? 'cry, weep'.

Bi-intransitive verb roots (and stems) occur within the predicate of the Bi-intransitive Clause Root. (See those Formulas and the Illustration which are numbered 3.) Some bi-intransitive verb roots are oq 'enter', nox 'fill', gax 'go down', xot 'go up'.

Within the predicate of the Transitive Clause Root there is not just one type of transitive verb roots and stems, but also a

¹For more detail in meaning of these roles and their relation to clause root, see Pike, Kenneth L. and Evelyn G. Pike. 1977. Grammatical Analysis, Dallas, TX: Summer Institute of Linguistics, Chapters 3 and 7.

second class of verb roots. (See those Formulas and Illustrations which are numbered 2.) Some transitive verb roots of the first class are c'at 'see', cáp 'touch, catch', q'omax 'paint', č'ax 'wash', sok 'hurt', kano 'hunt', č'ay 'hit', č'oli 'scold', k'waša 'hear', sik'i 'read', poro 'burn', tik 'plant', weč' 'crush', čaxi 'care for'. The second class has just one member observed to date: tixo 'teach'.

Bitransitive verb roots (and stems) occur in the Bitransitive Clause Root. (See those Formulas and the Illustration which are numbered 1.) Some bitransitive verb roots are ya' 'give', sipa 'give away', ban 'do', qax 'borrow', melo 'return', wasá 'take away', max 'take', k'am 'receive', k'iaq 'throw', xac 'leave (property)', k'ayi 'sell', taq 'send'.

B. Verbs in Relation to Verb Roots

These five classes of verb roots from four different clause root types form the nucleus of three different transitivity types of verbs: transitive, intransitive, and bi-intransitive.

The difference between these verbs is comparable to the transitivity contrasts of the clause roots--the correlation of the fillers of the verb nucleus with the number and kind of participant tagmemes which occur in their respective margins. Those verbs which include in their margins undergoer and actor are transitive verbs. Both bitransitive and transitive verb roots fill the nucleus of this verb. Note that since there is no difference in the verb margins correlated with whether a transitive verb root or a bitransitive verb root is in the nucleus, we see that the transitive-bitransitive contrast is neutralized as a cohesion feature of the verb, hence only a transitive verb results. The undergoer tagmeme is filled by a primary person prefix, whereas the actor tagmeme is filled by a secondary person prefix. The Primary Person (IPer) class includes: in- '1 singular', at- '2 singular', #- '3 singular, 3 plural inanimate', etc. The Secondary Person (IIPer) class includes: {nu-} ... '1 singular', {a-} (a becomes aw before roots beginning with a vowel) '2 singular', {ru-} ... 'he/she/it', {qa-} ... '1 plural', etc. See Verb Formulas and Illustrations 1 and 2.

The verbs which include in their margins an actor tagmeme, but no other participant tagmeme, are intransitive verbs. The actor tagmeme is filled by a primary person prefix. The nucleus is filled by either an intransitive verb root or a bi-intransitive verb root. The intransitive/bi-intransitive contrast has neutralized as a cohesion feature of the verb, hence only the intransitive verb results.²

Now we present the small and asymmetrical part of the system. After extensive study, there has come to our attention just one

²For an extensive discussion of the Tzutujil verb (without reference to clause roots) see Butler, James H. and Judy Garland Butler, 1977. Tzutujil Verbs. Guatemala: Summer Institute of Linguistics. Dr. Charles Peck contributed to the analysis and extensively to the editing of the volume. For primary and secondary person prefixes see pp. 2, 7, 12, 17.

verb root tixo 'teach', which we mentioned earlier, occurring within the predicate of a Transitive Clause Root (a clause root which optionally includes a free actor and a free undergoer). This fact would support its classification as a transitive verb root, but it does not fill the nucleus of a transitive verb (which includes both undergoer and actor participant prefixes). The Primary Person (IPer) with tixo is not in agreement with the free undergoer in the including clause root, as is the case with the Transitive Verb, but rather is in agreement with the goal of the teaching, found in the larger context; such a goal or scope is not allowed in the including clause root--only the person teaching (actor) and what is taught (undergoer). Because the verb, in which tixo fills the nucleus, includes in its margins the roles of scope and actor, it is a bi-intransitive verb. Thus we see that by clause root criteria tixo is a transitive verb root, and by verb criteria is a bi-intransitive verb root, hence we call it a Transitive/Bi-intransitive Verb Root (T/BIVRt). It is the only filler of the nucleus of the Bi-intransitive Verb. We have shown above that bi-intransitive verb roots fill the nucleus of the Intransitive Verb.

We do not know if historically this irregularity is all that is left of a larger part of the system or is a recently developing complexity. In any event, any linguistic model must be able to treat such a phenomenon.

C. Verb Phrase in Relation to Verbs

In the Tzutujil Verb Phrase transitivity is neutralized as a cohesion feature; any verb phrase margin may occur irrespective of the occurrence of a transitive or of a bi-intransitive or of an intransitive verb in the verb phrase nucleus.

Examples showing neutralization of transitivity in Verb Phrases (The verb is enclosed in a box, the verb phrase is enclosed in square brackets, and outside is a clause root Adjunct-as-Scope):

1.

	I Verb	
[ma	s- in- war -(i)	ta]
neg	comp- I- sleep -cls	neg

'I didn't sleep.'
2.

	T Verb	
[ma	s- in- a- c'ät	ta]
neg	comp- me- you- see	neg

'You didn't see me.'
3.

	I Verb			
[s-	in- war -(i)	ci	na	xutix]
comp- I-	sleep -cls	again	yet	once

'I went to sleep yet once again.'
4.

	T Verb			
[s-	#- in- c'ät	ci	na	xutix]
comp- it-	I- see	again	yet	once

'I saw it yet once again.'

5.

BI Verb			
<u>s-</u>	<u>in-</u>	<u>ok</u>	<u>-(i)</u>

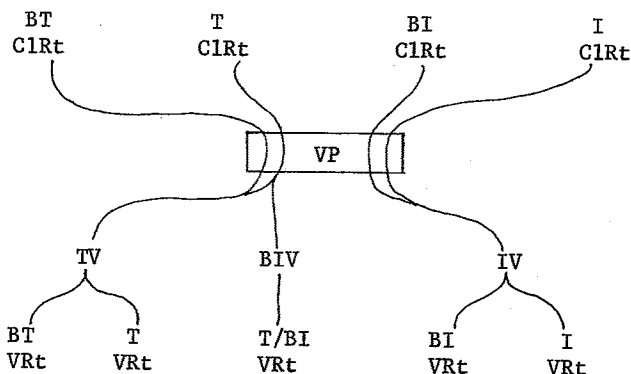
či ta] pa xay
 neg comp- I- enter -cls again neg in house
 'I didn't enter the house again.'
6.

BT Verb			
<u>s-</u>	<u>#-</u>	<u>in-</u>	<u>yä?</u>

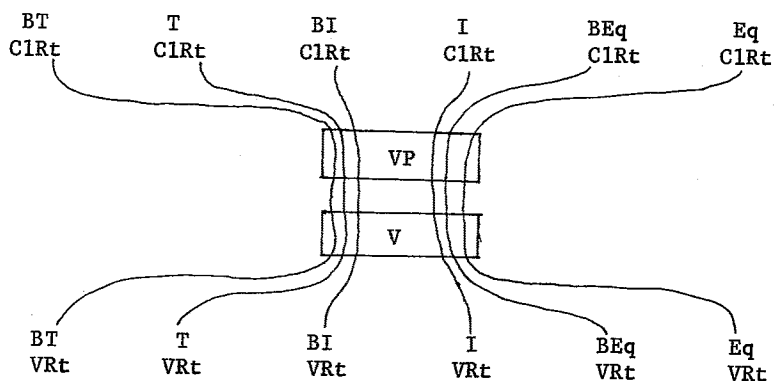
či ta] tre
 neg comp- it- I- give again neg to.him
 'I didn't give it to him again.'

See Figure 4 for a summary chart of these contrasts and neutralizations. In the second part of the chart we show, for comparison, the English transitivity system.

Tzutujil System:



English System:



Transitivity Contrasts of Verbal Clause Root
Types Down to Morpheme Classes of Tzutujil as Compared
with Transitivity Contrasts in English

Figure 4

of the Action Emphasis Voice clause root. This verb has an additional constraint, differing from all other verbs we have mentioned, in that only the continuative aspect prefix {n- ~ #-} occurs as a margin whereas in the other verbs, continuative may be replaced by completive {s- ~ #-} or by impending aspect {šk- ~ šti- ~ št-}.

Now we are able to identify the grammatical types of the three homophonous verbs cited earlier in this paper:

(1) Transitive Actor Emphasis Verb (Illustration 9)

	A				
'It is you who scolds someone.'	n-	at-	čʔoli	-n	-i
	cont-you-scold-Actor Emph-				
					cls
					(IPer)

(2) Actor Emphasis, U Focus Verb (Illustration 10)

	U				
'It is he who scolds you.'	n-	at-	čʔoli	-n	-i
	you-				

(3) Action Emphasis Verb (Illustration 11)

	A				
'You are always scolding.'	n-	at-	čʔoli	-n	-i
	you-				
					-Action
					Emphasis

IV. DESCRIPTIVE CLAUSE ROOTS

We discuss now the descriptive clause roots which illustrate the fifth kind of transitivity presented in this paper. Undoubtedly there are other types in the language, but we leave that for subsequent study. The two descriptive types we present each have two tagmemes, both of which are obligatory: Complement-as-Characteristic of the Subject, and Subject-as-Item. We suggest that the basic voice type is the one with the subject as the second tagmeme, whereas the one with the subject as the first tagmeme, may pattern as an emphasis type; this, however, is only a very tentative suggestion and needs considerably more study. An adjective phrase and a possessed noun phrase are the two immediate constituents of the basic voice types, whereas a pronoun and regular noun phrase are the constituents in the emphasis type; neither type contains a verb.

V. ACTIVE VERSUS STATIVE STRUCTURES

There is a third parameter to be mentioned but which we will neither illustrate nor develop: the active (which we have presented) versus the stative forms. A stative matrix of clause roots, derived from the active matrix (Figure 1), would present counterparts for each active type except for the action emphasis and descriptive types. The stative verb forms, which carry some of the differential characteristics between active and stative structures, are seen in Butler and Butler 1977:86-87.

VI. SYMBOLS USED IN FORMULAS

We present briefly some of the symbolism in the formulas. Each immediate constituent is a tagmeme with four characteristics

There are six basic clause root types in English. However, transitivity contrasts are neutralized, not only at phrase level, but also at verb level; neither the margins of the phrase nor the margins of the verb exhibit any difference correlated with any transitivity cohesion.

III. VOICE

The second parameter of clause roots treated in this paper is voice (See Figure 1 and Illustrations 6-12.). Voice has to do with the focus and emphasis placed on various tagmemes of the clause root. This involves a correlation of the roles of clause root tagmemes with kinds of affixes and their roles which may be included in their respective verbs. The basic type of voice (Figure 1 and Illustrations 1-5) carries normal attention and focus on the various clause root tagmemes, with more or less equal attention and focus on the subject (if present) as on the predicate, but with probably less attention on any other of the constituents.

Each of the nonbasic voice types includes suffixes of emphasis and/or focus in the margins of their verbs. But an especially interesting feature is that although only transitive or bitransitive verb roots occur in the nucleus of their verbs, just one person prefix (IPer) occurs in the margins of their verbs. This is in contrast to the basic voice types in which it is only with intransitive and bi-intransitive verb roots that just one person prefix (IPer) may occur and that prefix always has the role of actor, agreeing with the free actor of the including clause root. When that prefix occurs in the basic voice type with transitive or bi-transitive verb roots it carries the role of undergoer; with the transitive/bi-intransitive verb root it carries the role of scope. In two of the nonbasic voice types (Passive - Illustrations 6, 7, and Actor Emphasis, Undergoer Focus - Illustration 10) the Primary Person carries the role of undergoer. In the first of the two types that person agrees with the free subject of the including clause root which also carries the role of undergoer. In the second of these two types the Primary Person agrees with an undergoer which is not allowed in the including clause root, but rather is to be found in the larger context.³ In the two other nonbasic voice types (Actor/Item Emphasis - Illustrations 8, 9, and Action Emphasis, referred to in some literature as the 'absolutive' voice - Illustration 11) the Primary Person carries the role of actor, agreeing with the free subject of the including clause root. The free subjects in the actor-emphasis types are obligatory whereas the subjects of the other types are not.

In the nonbasic voice types there are three suffixes marking emphasis and/or focus. The passive suffix {-s} occurs in Passive (Undergoer Focus) Voice (Illustrations 6,7); only in this type does the free subject carry the role of undergoer. The actor emphasis suffix {-aw ~ -n} occurs in the verbs of the two Actor Emphasis types; only in these two types is the free subject obligatory. The action emphasis suffix {-on ~ -un ~ -n} occurs in the verb

³See Butler, James H. and Kenneth L. Pike, "A Preliminary Note on Experimental Syntax in Tzutujil (Mayan) Discourse" in Studies in Languages of Guatemala, 1977. Charles C. Peck, ed. to appear.

which are displayed in a four cell array of SLOT, CLASS(ES), ROLE, and COHESION as seen in Figure 5. The class or classes represent

+	SLOT	CLASS(ES)
	ROLE	COHESION

The Four Cell Tagmeme

Figure 5

the physical substance (what you hear or, in case of written materials, what you see) of the tagmeme. Both slot and role have to do with the relation of the class to the immediate constituents (one or more) of the construction of which it (the class) is an immediate constituent. Slot designates the construction (NP or Declarative Sentence or Topic Sentence Cluster, or other) in which the class is functioning and whether it is a nuclear or marginal constituent in relation to the other immediate constituents. Role designates the function the class carries in relation to the other immediate constituents of the including construction. Cohesion is also a relational feature. There are two kinds: (1) occurrence cohesion and (2) agreement cohesion. The first is shown by an obligatory (+) sign or an optional ($\pm$) sign or any combination thereof to indicate when the class or tagmeme may occur. Agreement cohesion has to do with the selection of a member of a class in relation to a specific constituent in the context--whether on a higher, same, or lower level of the hierarchy. If the tagmeme governs the occurrence of a form in another tagmeme, an arrow ($\rightarrow$) is to the right of the cohesion symbol; if the tagmeme is governed by another tagmeme, the arrow is to the left of the symbol; if the conditioning is mutual, arrows are placed on both sides of the symbol.

In a formula the construction class label (hence also level) is indicated to the left of the equals (=) sign and is omitted from each slot cell of the immediate constituents of the construction. Numbered symbols of cohesion are used in the cohesion cell. A full statement represented by those symbols follows the list of formulas. Each class requires a lower level formula until all classes are morpheme classes; we have included only more important lower level formulas and morpheme classes in this paper. Examples of crucial morpheme classes already listed include: verb root classes, person prefixes, and aspect prefixes.

We present formulas for each clause root type shown in Figure 1; each can be identified by the number in the cells of the figure.

Note that the neutralization in the verbs between bitransitive and transitive, as well as between bi-intransitive and intransitive, results in two less verb contrasts at this point than clause root contrasts. This is also reflected by showing two clause root

numbers before a single verb formula, indicating the two clause roots in which the verb occurs (1,2; 3,4; 6,7; and 8,9). However, because one verb root which occurs within the predicate of the Transitive Clause Root, requires verb margins different from both the Transitive and the Intransitive Verb, a third verb contrast has developed: Bi-intransitive which carries the number 2 corresponding to its clause root number and to its illustration numbered 2b. There are no verb formulas 5 and 12 because those clause roots do not contain a verb. The Tzutujil illustrations also correlate with the numbers of the clause roots. These formulas show the identifying and contrastive features of each type but not any order variants. Note that if a tagmeme in one construction type is the same as one already presented in a formula, such a tagmeme is written out, so that only contrastive tagmemes are shown in the four-cell display, thereby making the contrastive features more visible.

VII. FORMULAS FOR DECLARATIVE ACTIVE NONREFLEXIVE CLAUSE ROOTS

1. BTC1Rt =

$\pm$	S	Pro		$+$	P	VP		$\pm$	Ad	NP		$\pm$	Ad	DirP ₁
	A	NP			Sta	>3.BT >			U				Sc	DirP ₂
		1.SmA >				>1.SmA				2.SmU >				NP
						>2.SmU								?

2. TC1Rt =

$\pm$ S same as in C1Rt 1.	+	<table> <tr> <td>P</td> <td>VP</td> </tr> <tr> <td>Sta</td> <td>>4.T ></td> </tr> <tr> <td></td> <td>>1.SmA</td> </tr> <tr> <td></td> <td>>2.SmU</td> </tr> </table>	P	VP	Sta	>4.T >		>1.SmA		>2.SmU	+	U same as in C1Rt 1.
P	VP											
Sta	>4.T >											
	>1.SmA											
	>2.SmU											

3. BIC1Rt =

$\pm$	S same as in ClRt 1.	+	<table><tr><td>P</td><td>VP</td></tr><tr><td>Sta</td><td>>5.BI ></td></tr><tr><td></td><td>>1.SmA</td></tr></table>	P	VP	Sta	>5.BI >		>1.SmA	+	Sc same as in ClRt 1.
P	VP										
Sta	>5.BI >										
	>1.SmA										

4. IC1Rt =

+	<table> <tr> <td>P</td> <td>VP</td> </tr> <tr> <td>Sta</td> <td>>6.I ></td> </tr> <tr> <td></td> <td>>1.SmA</td> </tr> </table>	P	VP	Sta	>6.I >		>1.SmA	+	S same as
P	VP								
Sta	>6.I >								
	>1.SmA								
		-	in C1Rt 1.						

5. DescriptiveC1Rt =

+	<table> <tr> <td>Co</td> <td>AdjP</td> </tr> <tr> <td>COS</td> <td>>7.Des></td> </tr> </table>	Co	AdjP	COS	>7.Des>	+	<table> <tr> <td>S</td> <td>PossNP</td> </tr> <tr> <td>It</td> <td>?</td> </tr> </table>	S	PossNP	It	?
Co	AdjP										
COS	>7.Des>										
S	PossNP										
It	?										

6. PassiveBTC1Rt =

$$+ \frac{S}{U} \left| \begin{array}{c} \text{Pro} \\ \text{NP} \\ 2.\text{SmU} \end{array} \right\rangle + \frac{P}{\text{Sta}} \left| \begin{array}{c} \text{PassTV}^4 \\ > 3.\text{BT} > \\ > 8.\text{Pass} > \end{array} \right\rangle + \frac{\text{Sc same as}}{\text{in ClRt 1.}} + \frac{Ad}{A} \left| \begin{array}{c} \text{AgP} \\ ? \end{array} \right\rangle$$

7. PassiveTC1Rt =

$$+ \frac{S \text{ same as in}}{\text{PassiveBTC1Rt 6.}} + \frac{P}{\text{Sta}} \left| \begin{array}{c} \text{PassTV} \\ > 4.\text{T} > \\ > 8.\text{Pass} > \\ > 2.\text{SmU} > \end{array} \right\rangle + \frac{A \text{ same as in}}{\text{PassiveBTC1Rt 6.}}$$

8. ArEmphBTC1Rt =

$$+ \frac{\text{EmphS}}{A} \left| \begin{array}{c} \text{Pro} \\ \text{NP} \\ 1.\text{Sma} \end{array} \right\rangle + \frac{P}{\text{Sta}} \left| \begin{array}{c} \text{ArEmphTV} \\ > 3.\text{BT} > \\ > 9.\text{ArEmph} > \\ > 1.\text{Sma} \end{array} \right\rangle + \frac{Ad}{U} \left| \begin{array}{c} \text{NP} \\ -- \end{array} \right\rangle + \frac{\text{Sc same as in}}{\text{ClRt 1.}}$$

9. ArEmphTC1Rt =

$$+ \frac{S \text{ same as in}}{\text{ArEmphBTC1Rt 8.}} + \frac{P}{\text{Sta}} \left| \begin{array}{c} \text{ArEmphTV} \\ > 4.\text{T} > \\ > 9.\text{ArEmph} > \\ > 1.\text{Sma} \end{array} \right\rangle + \frac{U \text{ same as in}}{\text{ArEmphBTC1Rt 8.}}$$

10. ArEmph,UFocusClRt =

$$+ \frac{\text{EmphS}}{A} \left| \begin{array}{c} 3\text{PerPro} \\ \text{NP} \\ 12.\text{NoU} \end{array} \right\rangle + \frac{P}{\text{Sta}} \left| \begin{array}{c} \text{ArEmph,UFocusV} \\ > 10.\text{ArEmph,U} > \\ > 12.\text{NoU} \end{array} \right\rangle$$

11. AnEmphClRt =

$$+ \frac{S \text{ same as}}{\text{in ClRt 1.}} + \frac{\text{EmphP}}{\text{Sta}} \left| \begin{array}{c} \text{AnEmphV} \\ > 11.\text{AnEmph} > \end{array} \right\rangle$$

12. SEmphDescriptiveClRt =

$$+ \frac{S}{\text{It}} \left| \begin{array}{c} \text{Pro} \\ > 14.\text{EmphDes} > \end{array} \right\rangle + \frac{Co}{\text{COS}} \left| \begin{array}{c} \text{NP} \\ ? \end{array} \right\rangle$$

⁴In the nonbasic voice types we have not treated the Verb Phrase, assuming it to be analogous to the VP in the basic voice, but rather we have placed the verb in the clause root predicate slot, thus bypassing the phrase level.

10. ArEmph, UFocusV =

$$+ \text{Asp same} + \frac{\text{Mar}}{\text{U}} \left| \frac{\text{IPer}}{\langle 12.U \rangle} \right| + \frac{\text{Nuc}}{\text{Sta}} \left| \frac{\text{TVRt}}{\langle 3.BT \rangle} \right| + \frac{\text{AEmph same}}{\text{as above}} + \frac{\text{Cls same}}{\text{in V3,4}}$$

11. AnEmphV =

$$+ \frac{\text{Mar}}{\text{Asp}} \left| \frac{\langle n \rangle}{?} \right| + \text{A same as} + \frac{\text{Nuc}}{\text{Sta}} \left| \frac{\frac{\text{TVRt}}{\text{VStem}}}{\langle 3.BT \rangle} \right| + \frac{\text{AEmph same}}{\text{as above}} + \frac{\text{Cls same}}{\text{as in V3,4}}$$

IX. FORMULAS FOR VERB STEMS

Here we present only two stem formulas from the considerable number in Tzutujil. The Transitive Verb Stem is of special interest in that the suffix {-bä} could be said to carry a causative meaning. Had it carried that meaning and at the same time occurred with virtually all verb roots, thus increasing by one the number of participant tagmemes in the clause root each could normally tolerate, then we would have posited a whole causative matrix derived from the basic matrix. However, the suffix is limited in its occurrence to intransitive verb roots such that the two-morpheme construction then occurs in the same slot that any basic transitive root may occur.

$$\text{TVStem} = + \frac{\text{Nuc}}{\text{Pred}} \left| \frac{\text{IVRt}}{--} \right| + \frac{\text{Mar}}{\text{Trzr or Cs}} \left| \frac{\langle -bä \rangle}{--} \right|$$

š- in- a- koc? -bä -? 'You made me lie
comp-me-you-lie down-trzr/cs-cls down.'

The Intransitive Verb Stem consists of a monosyllabic transitive verb root and a reduplication of the first root consonant followed by oš.

$$\text{IVStem} = + \frac{\text{Nuc}}{\text{Pred}} \left| \frac{\text{T}_1 \text{VRt}}{--} \right| + \frac{\text{Mar}}{\text{Intransitiver}} \left| \frac{\langle -C_1 \text{os} \rangle}{--} \right|$$

#- #- č^oay-č^ooš -i 'It got bruised.'
compl-it-hit-intzr-cls

COHESION FEATURES (NUMBER AND SYMBOL AS SEEN IN THE FORMULAS)

1. SmA: A(ctor) in verb is same as in clause root, or antecedent.
2. SmU: U(ndergoer) in verb is same as in clause root, or antecedent.
3. BT: BTVRt and BIVStem classes tolerate A, U, Sc(ope) participants in the clause root.

4. T: (1) TVRt and TVStem and T/BIVRt classes tolerate A, U participants in the clause root. (2) BTVRt and stems and TVRt and stems classes require A and U participants in their verb margins.
5. BI: (1) BIVRt class tolerates A, Sc participants in the clause root. (2) T/BIVRt class requires A and Sc participants in their verb margins.
6. I: (1) IVRt class tolerates only A participant in the clause root. (2) BIVRt and IVRt classes require only A participant in their verb margins.
7. Des: Requires Complement followed by a participant tagmeme of S-It.
8. Pass: S(ubject)-as-U in clause root; passive suffix in verb, and the only person (IPer) in verb is U.
9. ArEmph: Emphasis suffix in verb, as well as full aspect potential; obligatory EmphS-A and optional Ad-U in the clause root.
10. ArEmph,U: ArEmphUFocusV requires, in the clause root, EmphS-A manifested by a third person only.
11. AnEmph: AnEmphV requires S-A in clause root.
12. NoU: Undergoer in verb.
13. Sc of Cxt: The IPer agrees with the Sc within the context larger than the clause root (Sc is not permitted as a free form in the including clause root).
14. SEmphDes: Requires S-It manifested by a pronoun followed by Complement.

X. TZUTUJIL ILLUSTRATIONS OF FORMULAS

The numbers correspond to the number in Figure 1 as well as to the number of the formula illustrated. The slot and role of clause root participant tagmemes are indicated above and at the beginning of the word(s) filling those slots. Within the verb only the role of the participant tagmemes are indicated above the prefix which fills that role.

1.

<u>S-A</u>	<u>U</u>	<u>A</u>	<u>Ad-U</u>	<u>Ad-Sc</u>	
arxa?	š-	#- u- ya? -#	sun	wux	č- w -e
he	comp-I3-II3	give-cl	one	paper	dir-me-to

'He gave me
a book.'
- 2a.

<u>S-A</u>	<u>U</u>	<u>A</u>	<u>Ad-U</u>	
xa	pulisiya?	#- #- ke- čäp -#	xa	c'i?
the	police	comp-I3-II33	grab-cl	the dog

'The police
grabbed
the dog.'

- 2b. S-A Sc A Ad-U
 xa ra xwan š- oq- r- tixo -x t- r -e xa r-español
 the John comp-III-III3-teach-clš dir-him-to the the-Spanish
 'John taught us Spanish.'
3. S-A A Ad-Sc 'Evil
 ic š- #- oq -(i) t- r -e išoq o ači entered
 evil comp-I3-enter-clš dir-him-to woman or man the woman
 or man.'
4. A S-A
 #- #- war -i xa r- ala? 'The boy slept.'
 comp-I3-sleep-clš the the-boy
5. Co-COS S-It
 qas nim r- qan xa r- ači 'The man is very tall.'
 very big his-leg the the-man
6. S-U U Ad-Sc
 xa-la? xun wux le? #- #- sipa š- -(i) č- w -e
 the-that one book comp-I3-give-pass-clš dir-me-to
Ad-A
 r- mal xa ra tin 'That book was given to me
 him-by the the masc Tony by Tony.'
7. U Ad-A 'I was
 š- in- ča -x- p -i ku-mal xa pulisiya? grabbed
 comp- II-grab-pass-grab-clš II33-by the police by the
 police.'
8. EmphS-A A Ad-Sc
 xa r- a -wal #- #- ban -o(w -i) č- w -e
 the the-II2-child comp-I3-do-actor emph-clš dir-me-to
 'It is your child who did it to me.'
9. EmphS-A A Ad-U
 atat n- at- č?oli -n -i xa r- ak?al
 you cont-I2-scold-actor emph-clš the the-child
 'It is you who scolds the child.'
10. EmphS-A U
 arxa " " " " 'It is he who scolds you.'
 he
11. konga A
 much " " " " 'You are always scolding.'
 -action
 emphasis

12. S-It Co-COS
 e uc-lax taq -winaq
 they good-very plural person 'They are very good people.'

GRAMMATICAL CATEGORIES AND THE MARKING OF TEMPORAL DISTINCTIONS IN HAITIAN CREOLE

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One of the commonly accepted characteristics of creole languages in general, Caribbean creoles in particular, is that they pay more attention to aspect than to tense. By this is meant that the creoles mark for aspect more frequently than for tense. Be this generalization valid or not, in pursuing tense and aspect in the creoles literature, it is rarely made clear precisely what tense and aspect actually are, or how they have been determined by the various investigators.

In the case of Haitian Creole, all extant works tacitly view the language from the vantage point of the traditionally labeled grammatical categories of either French or English: French because of the transparency of lexical heritage, English because of its more analytic grammatical structure and so-called SVO word order. The view from French has even, in some cases, (cf. Hall 1953, Targete 1972) grouped the verbs into "conjugation classes", and both English and French frameworks have labeled as aspect markers, adverbs, auxiliaries and prepositions, forms which are most frequently fully verbal. Their translation into acceptable French and English would be realized in such word classes and categories, but the traditionally conceived label and word class membership may not be necessary or viable classificatory devices in Haitian Creole, nor in some other creole languages (cf. Williams on Sierra Leone Krio, 1976). For example:

1. N'al lekòl - We go to school.
We go school
2. Nu mènè ti-mun al lekòl - We take the child to
We lead child go school school.
3. Nu voye'l al bay yo - We send it away to them.
We send'it go give they
4. Li sòt lekòl - He left school.
He leave school
5. Li sòt di'm sa-a - He just said that to me.
He leave say'I that-the
6. Li pote mingo sòt nan mon-yo - He carried mangoes
He carry mango leave LOC mountain-they from
the mountains.

The above examples are indicative of what has led

[illegible]

Chart #1

Haitian Creole is a very strict SVO language, in the parlance of Greenberg's (1966) schema. That is, not only is Subject-Verb-Object the "normal" (Hall 1953, Racine 1970) syntactic order, i.e., the basic and most frequent declarative pattern, but the SVO characteristics are faithful to the entire implicational scale, excepting for the orders of "noun-numeral" and "direct' object-indirect object" which Haitian Creole reverses. Thus, that non-inflected, non-grammatically marked morphemes may occur in several slots of the rigid syntactic regime argues against a word-class approach to description of the language, rather for a more grammatically functional one. Meanings are malleable. In structural isolation, a morpheme carries "content". In syntactic context, the grammatical potential of a morpheme's semantic composition is specified as a fit within the functional slot. This is not to say that there are neither forms with singular grammatical function nor homonyms; there are. But, taking a traditional word-class tack to analysis of the language would produce a grammar that would fail to account as simply as possible for the mechanics of rendering grammatical meaning.

The grammatically non-redundant characteristic of Haitian Creole morphemes is mirrored not only on the level of utterance, but also of discourse. Just as many morphemes cannot be functionally or semantically categorized unless in syntactic context, the more specific meaning of single utterances is also better realized in discourse context. This is true of any language; it only may be more so for an unwritten language such as Haitian Creole which, for the vast majority of its users, is almost uniquely a tool of face-to-face communication. In the context of use, (both linguistic: the rigid SVO order and entire discourse passages, and extra-linguistic: gestures, facial and corporeal expressions and shared knowledge), the ambiguous possibilities are reduced. This is nowhere more obvious than in what has been called the verb system, wherein as succinctly stated by Tinelli, "the unmarked form of the predicate can be used to express any time period; the reference to past, present or future is then supplied by the semantic context, linguistic or extra-linguistic..."(op. cit. 44).

Chart #1 is labeled as SPvO rather than SVO for two reasons. One is that "P" is used to render the notation internally consistent: "V" indicated a word class, whereas "S" and "O" are grammatical categories. Secondly, SPvO better accounts for the fact that almost any so-called "part of speech", even entire phrases, can occur as non-verbal predicate(s) and commonly occur with members of the complex of predicate modifiers:

9. M te prɛzidɑ̃'l - I was president of it.
I ANT president'it.
10. Mwɛ te malad kuʃe - I was sick abed.
I ANT sick lie-down
11. L'ap kɛtɔ̃ - She'll be happy.
She PROG happy
12. Li nɑ mwɑ-u - It's in your hands.
It LOC hand-you.

Following the verbal predicate are objects in the respective order of indirect and direct, after which are various slots of complement function. A second verbal predicate may occur per sentence, a pattern known more commonly as verb serialization:

13. Nu rɛle dɔktɛ-a vini - We called for the
we call doctor-the come doctor.
14. Li ekri lɛt bɑ mwɑ - He wrote me a letter.
he write letter give I
15. N'ap pust'ɛl sɔti - We push him out.
We'PROG push'he leave

Within the clause, each of the S, P_y and O positions may be expanded into its own complex of fixed-order slots, many of which are further sub-divisible. Additionally, there is a series of positions labeled Predicate Modifiers on Chart #1, preceding the predicate proper, following the subject, whose functional sub-slots are the target of inquiry into tense, aspect and mode.

Because of the widespread belief among linguists that aspect receives greater emphasis than tense in creole languages, and the very discrepant literature extant on the categories of tense, aspect and mode in Haitian Creole in particular, the remainder of this paper will explore these categories. A priori assumptions concerning the three follow general tradition. To paraphrase Lyons, tense is a marked category which serves to relate time of action to that of utterance (commonly taken to be the speaking present) (1968:304). Aspect, while marking temporal relations, does not locate the event in time but depicts the quality of its extension in time (315). Lastly, mood manifests attitude of the speaker toward the predication (307). All three categories were originally thought to be realized by virtue of inflectional markings on the verb or by the presence of auxiliaries.

The first slot in the pre-predicate continuum, following the subject, is that for the negation marker pa. Should doubly marked negation occur, the usual pattern is the juxtaposition of the two forms before the "temporal reference" or tense slot, although when the marker te/t is present, it is not uncommon to find

that it separates the two negators:

16. Li pa't vle dɔmi - He didn't want to sleep.
He NEG*ANT want sleep
17. Li pa't zâm vle dɔmi - He never wanted to
He NEG*ANT never want sleep sleep.

The following slot can be filled by only one morpheme, te/t, a clear marker of pastness in the sense of anteriority.

It is significant to note that te/t establishes the temporal point of reference, not necessarily from the time of the speech event itself, rather from the time of the act or event being talked about. Once the scene has been set, and so long as the topic and/or chronology of events remain(s) uninterrupted or unchanged, te/t does not mark every predicate. To signal the anteriority of an event or state prior to the already-past scene itself, te will re-occur.

In a story by one speaker about two countrymen who wanted to go to the city and learn French in order both to survive the city and raise their prestige in the mountains, the scene is set with a te in the initial sentence:

Te gâ dt neg...
ANT have two guy...

After that, there are no te-marked utterances, until the men happen on an accident that had occurred before their arrival.

Te fê aksidâ e lot mun di "Aparête"
ANT make accident and other person say "Apparently
l te mɔri".
he ANT die".

Both the fact of the accident and the death of a man are new information, a new topic. Although both had been realized prior to the current time of the story, there is also a focusing function of the te-marking. That the hearer capture these facts is integral to the comprehension of the eventual moral of the story.

A salient characteristic of any discourse passage is a very high frequency of sentence-initial adverbials, for which a pre-subject slot was posited. Many tapes were examined in order to determine the possible membership of this position. The common features abstracted from these forms were found to be their nominal character and their function of spatio-temporal reference in relation to previous narrative. At the same time as they serve to maintain an action or state in time, they serve to cohere the content of utterances. The substantive nature of the "adverbials" is demonstrated by the fact that they occur frequently with various deter-

miners, definite and demonstrative. For instance, although the morpheme lè is translated as "when" in sentence-initial position, the same form occurs in the question ki lè li ye 'what time it be?'. As an adverbial, the combinations lè-a-la, meaning 'time-the-there' and lè-sa-a 'time-that-the' are common. The determiners a, sa and la demonstrate the nominal character of lè. Although kunyea is translated as "now", historically, its composition of morphemes means 'place we/he be-the!'. Whether or not speakers are aware of the content and metaphor of kunyea, it, too, can be used with a determiner in the construction kunyea-la to signal the presentness of a particular topic or event. Avà and depi, which closely resemble their French etyma, the adverbs and prepositions avant and depuis, are found to take the determiner in sentence-initial position. Their readings are then "the-before" and "the-since". These forms, which act as spatio-temporal adverbials, may occur in utterances that carry tense marking, but their frequency of occurrence is much greater than that of the te/t. Functioning as substantive reference to location in time, the sentence-initial adverbials are not tense markers on the same order as te/t. They reinforce the time set while serving to maintain the temporal coherence of discourse.

The slot occupied exclusively by te/t is followed by one occupied exclusively by the morpheme a/ava/va that has been called the future tense marker. Consonant with the meaning of "anteriority" marked by te/t, a/ava/va serves to designate "posteriority" from the time of the narrated event. At the same time, it carries the nuances of mood; a sort of statement, often decisive, of intent, especially when used in a present co-terminous with the speech event. A/ava/va cannot be considered the exclusive marker of posteriority for at least two reasons: 1) the progressive aspect ap/ape is utilized in more certain, immediately contiguous "futurish" constructions and 2) the pre-predicative and full verb prale/pral, meaning "going", shares the role of indicating a future.

18. m'a rɛl u nâ tɛlefɔ̃n, pu m'ap tuʒu pal avɛk u.
I'POS call you LOC phone, for I'PROG always
talk with you.

19. M pral bwɛ kafɛ; m'ap tɛnɛ -
I going drink coffee; I'PROG return.

The juxtaposition of te/t and a and their contraction into ta yields a conditional reading:

20. M pâse nâ pei etrâzɛ m ta ka ɛde o
I think LOC country foreign I COND able help
they.

Following the tense-marking slots is the Pre-predicative position, composed of three slots. The graphic representation of internal syntactic order depicts the general pattern. Forms, subject to co-occurrence constraints, are plausibly interchangeable and may occur in short strings. The first sub-slot, that for aspect, is filled by two morphemes, ap/ape and fək. Ap/ape marks progressive/durative or contiguous future. The aspectual function of durativity is however not uncommonly realized by more substantive, descriptive and unmarked constructions:

21. m travay travay travay - I am/was working.
I work work work
22. Nu la nu la nu la - We were (being) there.
We there we there we there

Fək is the marker of punctuality. This aspect is also realized by the use of a pre-predicative element whose semantic composition in addition includes features of activity, thus the sense of punctuality is more dynamic. This is sət, whose full verb meaning is "leave".

23. M fək fe'l - I just did it.
I PUNC do'it.
24. Li sət di'm sa-a - He just said that to me.
He leave say'I that-the

These two aspect forms, ap/ape and fək, share with the tense markers the inability to occur as full verb predicates, even in elliptical constructions. Ap/ape and fək clearly do not serve to locate the predicate proper in time, rather to qualify its nature; i.e., its durativity or punctuality, which contrasts them with the small group of pre-predicative forms which also cannot fill the full verb slot, but have in common a feature of attitude (possibility, obligation, certainty, incapacity, right, permission) toward the predication and are therefore considered as modal in function.

The last group, far more numerous, is labeled "mixed". All may occur as both pre-predicative and full verbal or non-verbal predicates. In other words, some of these forms have been accorded the aspectual functions of "inchoative", "iterative", "habitual", "intensive", "perfective" and "punctual", but occur also as the verbal predicates meaning respectively "begin", "turn", "know", "go", "finish", and "leave". Others, which have been assigned the modal functions of necessity, possibility, obligation and capability are realized by forms which occur as independent predicates, both verbal and non-verbal. Some members of the "mixed" slot may, in addition, occur as the second verbal predicate of a sentence. The modal and aspectual roles are marked on Chart #1, as is their poten-

tial to occur in the second verbal predicate slot.

In conclusion, because the tense markers te/t and a/ava/va occur with such minimal frequency compared to that of the range of pre-predicatives, it is true that translating Haitian Creole utterances into grammatical and meaningful French or English would suggest a predominance of aspect marking.

There are two options, though, for interpreting the status of the aspectually and modally functioning members of the large mixed category of pre-predicatives. Each of these is either 1) a single element with at least two grammatical functions or 2) each is homonymous with a form which differs in grammatical function, but scarcely in semantic composition.

The possible grammatical functions of morphemes are not marked by their structure nor by inflectional processes, but are indicated by slot locus in syntactic context, contingent on semantic co-occurrence constraints. This is not to say that aspect does receive less attention than is claimed, rather that aspect is predominantly signaled by the juxtaposition of semantically full forms which function to modify the predicate. At the same time, while there is tense marking, it is also associated with other functions. Te/t serves as a grammatical marker of anteriority in relation to the time of the recounted event and makes focal in discourse a change of topic or new information within a particular speech passage already set anterior to the speaker's present. While the tense marker does not occur redundantly, once the scene is set, the sense of temporal locus is maintained by the heavy use of adverbials, usually sentence-initial and substantive in nature. A/ava/va marks for posteriority but also acts, in some contexts, as a modal. These extra-temporal functions: discourse focus and modality, and their association with the tense markers, are deserving of further study.

The grammatical marking device of Haitian Creole is word-order, or, better, that of morphemes. That order is seen as a series of distributional slots, each associated with a particular grammatical function. Units with flexible semantic composition are not marked formally, i.e., inflectionally, for possible grammatical roles. Rather, it is the interaction of these two variables: the functional properties of slot position and the semantic versatility of forms which best serves to characterize the meaning-rendering, typologically analytic mechanics of the language.

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LISLAKH IV: HINDO-HITTITE HAITCH
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The comparison of Lisramic (L, = Afroasiatic) core vocabulary items, both attested and reconstructed, with Indo-European (IE) and Indo-Hittite (IH) ones has yielded a number of very probable sound correspondences. Among these it appears that IE *dh* corresponds to L glottalized (aliquando emphatic) dentals. For example,

	Sem	Eg	Cu	Ch	Ber	IE
1.1	*wǝ? to go out	wǝ? depart		*d'ə go	(Tam. awd reach)	*wedh- go
1.2	*rdy do a favor	(r)ǝ? give				*dhē- put
1.3	*siǝ tree	sǝ spool	*ma[t]- tree			*widhu- tree
1.4	(Ar. tarratu flank)	ǝrt hand ǝrww side	(Som. d'aróorayya bank up)	(Ha. tsārā arrange)	(Tou. ader leg)	*dher- hold
1.5	*θurr- flint	ǝ3 fire drill wǝ3t knife		(Ha. tsūrā handleless knife)		*dhō-r- (Skt. dhāra kind of stone, sharp edge)

On the other hand, plain *a* corresponds to plain *a*:

2.1	*ydə know	[sǝ/sd perceive	*[sa]daə- be able, know	*idə eye		*weid- see, know
2.2	*yad- hand	dw give, put wd? put		(Sha di give)	*əd/ *yīd with	*dō- give *dous- arm

The idea that IE aspirates result from consonant plus 'laryngeal' goes back to Saussure (Polomé 1965:12). It was therefore a logical first step to investigate possible correspondences between IE aspirates and L glottalized consonants. The results were most promising with *dh* and there is some correlation with *kh*. The others do not support the hypothesis (at least as far as my data show).

Previous investigators have not come up with the same correspondences as above given, though there is overlapping. Möller connected Sem. *t* and IE *dh* (1906:91-95) but Sem. *p* (ð) with IE *d* (115-18). Some of his *t:dh* examples are valid ones. Cuny has a theory of 'strong emphatics' yielding IE voiced aspirates (*bh*, *dh*, *gh*) and 'weak emphatics' yielding IE non-aspirates (*b*, *d*, *g*) (1943:119). My data do not confirm this. Brunner has disparate relationships for the emphatics (e.g., Sem. *t* or *t* IE *d* or *dh*, *t:t*, *ð:dh*, *θ:t*, etc.; 1969 vi-vii). Illič-Svityč did not set up glottalized:aspirated correspondences (1971:147, table by Dybo). His sets deserve careful consideration, and I expect many of his L:IE ones will prove to be valid. (On the others I presently have no opinion.) As stated elsewhere, my own efforts were made independently of these and other scholars, in order to achieve maximum objectivity (1978:419). I am happy to acknowledge their precedence in any areas in which we have come to the same conclusions.

There are some aspects of the L *c?* IE *dh* correspondences which deserve further discussion. To introduce these, we take several examples which appear not to fit as well as one would wish:

1.6	[(Heb. ʔabnēt belt)]	bnd wrap up		*b'əndə bind		*bhendh- bind
1.7	(Ar. ṣabba pour)	ḡbt brick	(Som. doobo mud	*tab'- mud	(Tou. ṭubət be gathered into a mass)	*ti-bh- (Gr. tīphos wet ground)
1.8	(Akk. diqāru bowl)			*d'-ka calabash	[(Tou. etākā] a kind gourd	*dheigh- work with clay

These should be viewed in light of the following: 1) There are instances of emphatic/non-emphatic assimilation in Semitic (Brockelmann 1961 [1908]:154). 2) In some instances emphasis has been observed to have syllabic domain, rather than being a feature of a single consonant (Cairene Arabic, Lehn 1963). Neither of these factors explain the phenomena of 1.6-8. They do provide the basis for a solution. We are accustomed from Semitic, and especially from Classical Arabic, to consider emphasis as a feature of

a certain limited number of consonants. We should, rather, consider it a feature which may be assigned to either the first or second C of a CVC root, and which may also be assigned to the syllable. In the above instances, it is clear that we have the glottal/emphatic feature assigned once to each root, but sometimes to one, sometimes to the other consonant.

Turning to IE, we apparently have the same phenomenon in **ti-bh-* (1.7), where the second consonant has the added feature, just as does Chadic **tab'-*. In all other examples of IE CVC roots we have given the traditional reconstruction with ChVCh. Both internal reconstruction applied to Sanskrit and the evidence we have just seen from L, indicates that this is not the best analysis. There was, rather, a single feature of aspiration (or of something which historically resulted in aspiration) added to the plain root, with the second consonant, where possible, preferentially receiving it. For example, the Sanskrit root **dwg* 'to milk' is treated as having *h* added, along with accent, endings, etc. (The ordinary spelling, where different, of the attested form is added in parentheses.)

plus -á-mi	plus h	g loss	
*dāwgmī	*dāwghmī	dāwhmī (dóhmi)	I milk
plus -á-ši	plus h and voice assimilation		
*dāwgśī	dhāwkśī (dhókṣi)		you milk
plus -á-ti			
*dāwgti	dāwgdhi (dógdhi)		he/she milks
plus -tás (CwC>CuC)			
*dugtás	dugdhás		they two milk
plus -thás	(h addition blocked)		
*dugthás	dugdhás		you two milk

It should also be noted that there is evidence in both groups of languages that the prosodic feature was an addition (for L cf. Hodge 1976:48-49 and references). Semitic has many examples of 'plain' roots, paired with ones having an emphatic (e.g., Heb. *ʿālaz*, *ʿālas* and *ʿālaṣ* all 'rejoice' [Stuart 1835:59]). One finds many unaspirated forms in Vedic, where Classical Sanskrit regularly has only aspirated (Bloomfield and Edgerton 1932:47-69; e.g. *adukṣat*, later *adhukṣat* 'milked', Burrow 1959:94, 339-40).

(The forms of **dwg* given above are representative of the complexities involved, a complete treatment being here out of the question. For a generative discussion see Anderson 1970.)

Example 1.6, though used by Möller (1906:110-11) and others, is not without problems. The Hebrew has been suspected of being borrowed from Persian, the Egyptian of being borrowed from Hebrew. Neither claim has been proven. The Egyptian form is not attested before the New Kingdom (when a different spelling would be expected for a loan) and could well be from an older native Egyptian **bnǵ*, which would fit the sound correspondence pattern. The IE (IH) should be **bend-* plus *H* as per the discussion. In 1.8 the original assignment of *ʔ* is in doubt; it occurs in either (or neither - Berber) position; again IE (IH) **deig-* plus *H*.

We are therefore led to the positing of a pLL prosodic feature: *ʔ*, actualized as glottalization or emphaticity in L and as aspiration in IE (perhaps glottalization in IH, ambiguously representable as *H*). Its domain is the root syllable and its boundaries (including contiguous consonants). As actualized, the feature is usually on one of the boundaries. Within the family we may call it *ʔ*indo-*ʔ*ittite *ʔ*aitch.

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PREDICATION THROUGH AN OBLIGATORY COPULATIVE VERB

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Many beginners' grammars of Latin start with short sentences like *Rōma est magna* or *Rōma est in Italiā*, which imply a structure of subject and predicate similar to English as well as the Romance languages.¹ Only later, if at all, does the student perceive for himself that the Latin equivalent to 'Rome is big' treats the copulative verb most often as an enclitic right after the adjective: *magna est*. The pronunciation *magnast* resulted naturally from the habitual sequence *magna + est*. In colloquial English the copula may also undergo phonetic reduction, but it is annexed to the subject: 'Rome's big.'

To cite actual examples from the ancient texts,
Causa iusta est 'The cause is just' or 'It's a just cause' (Plautus, *Aulularia* 688);

Cantiō Graecast 'There's a Greek song' (*Stichus* 707);

Annōna cārast 'Food is dear' (Terence, *Andria* 746);

Magna est praeda 'It's a big take' or 'The take is big' (Plautus, *Asinaria* 317);

Iustum est bellum 'It's a just war' or 'The war is just' (Livy 9.1.10).

But *Vera causast* 'There's a valid reason' (Terence, *Heauton Timorumenos* 336) shows the order: adjective, noun, copulative verb. Even when *est* comes before an adjective and after a noun, it does not determine that the adjective be taken for a predicate, as in modern languages. For instance, *Labōriōsa, adulēscēns, vita est rústica* (Plautus, *Vidularia* 31) does not mean 'A hard life is rustic, young man,' but 'Rustic life is hard.'²

Under some circumstances *est* and the related forms *sum, es, sumus, estis, sunt* are liable to be left out, as in *Rārī imbres, ūber solum* 'Rains are scarce, but the soil is rich' (Tacitus,

¹Frederic M. Wheelock, *Latin: An Introductory Course Based on Ancient Authors*, 3d ed. (New York [1963]), p. 21, even presents *Fortūna est caeca* as "quoted verbatim" (cf. p. 10) from Cicero, who actually wrote *Non enim solum ipsa fortuna caeca est sed eos etiam plerumque efficit caecos quos complexa est* 'For not only is Luck herself blind but also for the most part she makes those whom she embraces blind' (*Laelius* 54).

²To be sure, we can say 'Life is hard on the farm' (as well as 'Life on the farm is hard' or 'It's a hard life on the farm'); but in any case the predication is focused on the adjective *hard*.

Historiae 5.6). The authors who did this the most, certainly admired and perhaps were deliberately imitating a Greek style in which the corresponding verb was commonly omitted.³ For in Greek the omission is more congenial; a subject is often marked by the definite article, and an adjective without the article can be understood to have a predicate function, so that *δίκαιος ὁ λόγος* (Aristophanes, *Ranae*⁴ 608, 637) with no verb means nearly the same as *Causa iusta est*.

The ending of the Latin verb indicates first, second, or third person, and either singular or plural. Beyond that, the facts of the language hardly impose a strict determination whether the other words are subject or predicate. The terms *subiectum* and *praedicatum* were translated from the Greek *ὑποκείμενον* and *κατηγορούμενον*. They were compatible with the Latin language and got incorporated in the tradition of the grammarians. They are so familiar to us that we might feel lost without them. But, as I showed before, in Latin there is only a tendency, not a rule, to place the copulative verb after the adjective and thereby to mark the predicate.

Any earlier word in the sentence, or any subsequent word, is formally unassigned. *Causa* in *Causa iusta est* can -- from our foreign point of view -- be easily interpreted either as subject, 'The cause is just,' or as part of the predicate, 'It's a just cause.' *Civis Rōmānus sum* (Cicero, *In Verrem* 2.5.162, 168) has the same structure, but we are obliged to translate it 'I'm a Roman citizen.' *Civis* is as much the subject of one Latin sentence as *causa* is of the other; but we can show this in English only by a drastic paraphrase, 'My citizenship is Roman.' The same Latin words, in another text, appear with the order changed: *Rōmānus sum civis* (Livy 2.12.9); but the meaning seems unaffected.

A copulative verb in a Latin sentence accompanies predication but does not pin-point it. Or to the extent that it does by its enclitic position, that position is the opposite of the one which became standard in the Romance languages. This reversal has received less attention from linguistic theorists than the somewhat comparable development of the Romance rule that an object noun follows the verb. In Latin texts the syntax of the copulative verb remained unchanged while the language became less and less vernacular.⁵

The shift was a Romance development, and by no means com-

³Compare the *Germania* of Tacitus with a similar ethnographic passage in Caesar's *Gallie War* 6.11-28. Tacitus often leaves out *est* or *sunt*; Caesar, whose style seems nearly free from mannerisms, never does.

⁴*Βραχύς ὁ ἔλεγχος* 'The test is short' (Lycurgus 33).

⁵E.g., the *Itinerarium* or *Peregrinatio* attributed to Egeria (Aetheria) has *est deputatum* once, but *scriptum est* and the like at least 85 times; Joseph Anglade, *De Latinitate libelli qui inscriptus est Peregrinatio ad loca sancta* (Paris: 1905), p. 85.

plete when the classics of medieval poetry were composed. In the *Song of Roland* a typical predication is *Bon sunt li cunte* (1097), which apart from the definite article continues the Latin structure, *Bonī sunt comitēs* 'The comrades are good.'⁶ Similarly the poem of *Mio Cid* has *Espeso e el oro* (81), which in Latin would have been *Expēnsū est aurum* 'The gold is spent'; *Alto es el poyo* (864) 'The knoll is high,' from *Altum est podium*. R. Menéndez Pidal observes that this verb was unaccented and accordingly excluded from an initial position in early Spanish.⁷ It differs, however, from Latin enclisis in that the vowel is not liable to be dropped: *alto es* does not get written *altos*, whereas in Latin we find *Liquidumst auspiciū* 'It's a clear omen' or 'The omen is clear' for *liquidum est* (Plautus, *Persa* 608). The Romance copula is rather proclitic, with its vowel pronounced but normally unstressed and therefore not diphthongized.

Those Old French and Old Castilian sentences are like Livy's *Iustum est bellum*. But the other Latin order -- first the noun, then the adjective and the copulative verb, as in *Causa iusta est* -- is rare if not lacking in the Romance dialects, from the outset, except for Sicilian. Gerhard Rohlfs cites a modern example from the province of Catania, *A suppa bōna esti* 'The soup is good,' and from the province of Girgenti, *La piccilidda vattiata è* 'Is the little one baptized?'⁹ The feminine article *a* and the verb *esti* sound as if they were from Doric Greek (*ἄ . . . ἐστι*), which prevailed over much of Sicily before and after the Roman conquest. In the limited corpus of Doric literature I happen to have found just one instance of it, *ἄ σταφυλὶς σταφίς ἐστι* (Theocritus 27.10), which means literally 'The bunch of grapes is turned to raisins' and figuratively 'The face is wrinkled.'¹⁰ There are, of course, more occurrences in the other

⁶Ferdinand Brunot and Charles Bruneau, *Précis de grammaire historique de la langue française*, 2d ed. (Paris, 1937), p. 279.

⁷*Cantar de mio Cid: Texto, gramática y vocabulario*, 2d ed., I (Madrid, 1944), 412-414.

⁸Some early Spanish glosses show the diphthong: *dulce iet* is a gloss upon the Latin *suave est* (the correct spelling would be *suave*), and *tueleisco ies* upon *tu ipse es*. R. Menéndez Pidal, *Orígenes del español*, 3d ed. (Madrid, 1950), pp. 8, 358, copies the letter *i* in the elongated shape *j* at the beginning of a word (*jet*, *jpse*, etc.); but this was purely a matter of lettering, not spelling, until the 15th century.

⁹*Historische Grammatik der Italienischen Sprache und ihrer Mundarten*, III (Bern, 1954), 209. Cf. *Mas tres semanas de plazo todas complidas son* 'But three weeks of grace are all over' (*Cid* 3533). *Son* at the very end may be motivated by assonance. I am not prepared to argue that this was a normal order in early Castilian.

¹⁰The rest of this verse is much disputed by scholars and

dialects; for it is quite normal Greek:

ὁ θρόνος χρυσεός ἐστι 'The throne is golden' (Herodotus 1. 183.1; cf. 7.223.1);

τὸ πρᾶγμα φανερόν ἐστι 'The matter is clear' (Aristophanes, *Vespae* 921);

ποῦ ποθ' ἡ γυνὴ προὔδῃ 'στὶ μοι; 'Wherever is my wife gone?' (*Ecclesiastusae* 311);

τὰ σκευάρια πλήρη 'στὶν 'The vessels are full' (*Plutus* 809; cf. ἡ μὲν σιπή μεστή 'στὶ 'Here the meal-tub is full,' 806).

As the influence of Greek upon the Romance dialects of Sicily is open to controversy, it is best to put aside those Sicilian forms which on their face resemble Latin less than Greek, and to stick to the other Romance phenomena, which have surely developed out of Latin. In the Old French and Old Castilian texts which I have cited, the position of the verb was already less free. It had become the link between the predicate and the subject, or between the subject and the predicate. Of those two sequences, the one with the subject first came to prevail and has been normal for many centuries.

The intermediate position of the verb entails a somewhat different function, excluding the subject from the predicate. In Latin the verb *could* often occur between the adjective and the noun, as in *Iustum est bellum*, or less often between the noun and the adjective. But the noun and the adjective could just as well be juxtaposed, and that did not make the relation attributive rather than predicate. Latin, as we have seen, does not really distinguish 'It's a just cause' from 'The cause is just.' Here we seem to have, in English, a distinction without a difference -- or the difference is very subtle.

With two nouns, instead of a noun and an adjective, the Latin construction likewise did not distinguish predication from what is customarily termed apposition:

Paene insula est Peloponnēsus 'Peloponnesus is an island, nearly' (Livy 32.21.26);

Phoenicē urbs est Epīrī 'There is a city Phoenice in Epirus' (29. 12.11);

Māter est Eunomia 'Eunomia is the mother' (*Aulularia* 361).

We could readily say 'The mother is Eunomia' -- the position of these two nouns being interchangeable in English; but Latin tends not to place the copulative verb after the noun analyzable as the subject. This is repeatedly illustrated in two verses spoken by a bawd who compares her business to fowling, in Plautus' *Asinaria*:

may be corrupt, but that does not jeopardize the words I have quoted.

¹¹ Bruno Migliorini, *Storia della lingua italiana* (Firenze [1958]), p. 136, remarks the alternations *esti* : *è*, *avi* : *à*, *sapi* : *sa*, *fachi* : *fa* in the oldest Sicilian poetry; a subsequent specimen (on p. 280) also has *esti*. Conceivably *esti* could have been engendered without a Greek source; but it looks as if the Greek helped.

Aedēs nōbīs ārea est, auceps sum ego, ēsca est meretrīx, lectus illex est, amātōrēs auēs (220-221)
 'For us the house is a [fowling-]ground,¹² I am a bird-catcher, the harlot is bait, the bed is a decoy, the lovers [are] birds.' The metaphorical term is followed each time by the verb, whereas the words expressing reality -- *aedēs, ego, meretrīx, lectus* -- are not. Similarly, in another comedy, *Muscaster meus pater* 'My father is a fly' (*Mercator* 361), meaning that he gets in everywhere.¹³

The Romance languages achieved a demarcation of subject and predicate that was much less evident in Latin. As Latin has been taught to us in school for a thousand years or more, the subject of a sentence is something you often have to look for. The more immediate phenomena are certain endings that are likely to be nominative; if so, they may indicate the subject, but not necessarily. When the language was quite vernacular and not learned through schooling, the people's understanding of it could scarcely have depended on the grammatical analysis that has become second nature to Latinists. The ancients spoke, and they made sense of what they heard, without that particular sort of processing. I do not argue that the dichotomy of subject and predicate, as applied to Latin, is an utter fiction; but it is less real there than in the Romance languages.

The Romance syntax of the copulative verb was, of course, not decreed by the leading speakers in such-and-such a year. But neither did it arise unconsciously among people out of touch with the alternative that had previously obtained in Latin. It gained in usage by the preference of generations, and it became virtually a consensus. So it was arrived at through their common sense, and deserves to be respected as such. While they had no need and no occasion to argue explicitly or speculate about better and worse ways to arrange words, yet experience showed in the long run what was more effective.

I would not infer that the Latin way had no advantages whatever; for there is something very neat in *Aedēs nōbīs ārea est*, etc. But on the other hand the Romance way is certainly not a change for the worse. It ought to commend itself to grammarians in the Occidental tradition, since it embodies right on the surface what their analysis postulates in the abstract: the subject first, then the copulative verb and the predicate adjective.

Those who are convinced that languages have a "deep struc-

¹² The verb agrees with the singular noun right before it (though we analyze *ārea* as the predicate), rather than with *aedēs* (which we call "grammatically plural" and translate 'house,' just like the actual singular *domus*).

¹³ Another neat example is in *Asinaria* 619:
 A: *Num fūmus est haec mulier quam complexāre?*
 B: *Quīdūm?* A: *Quia oculī sunt tibi lacrimantēs, eō rogāuī.*
 'This woman that you're hugging isn't smoke, is she?' 'How so?'
 'I asked because your eyes are tearing.'

ture" may find, on that level, a match between *Causa iūsta est* and *La causa es justa* or *The cause is just*. For the practical purpose of translation nobody hesitates to treat them as equivalent. In some languages, more than others, an ordinary sentence divides easily into subject and predicate, without complicated rules. But if a neat split is unfeasible and instead we have to pick out separate words and call them the predicate, that should be a warning that our analysis is reading something into the language or forcing something upon it.

Take the word-order of questions that is common to English and some Romance languages: *Is the cause just?* *¿Es la causa justa?* Here the copulative verb does not introduce the predicate; indeed the speaker is not ready to predicate anything, as he does in the straightforward declaration *The cause is just* or *La causa es justa*. However, Spanish also has the interrogative word-order *¿Es justa la causa?*¹⁴ Here the predicate adjective comes right after the copulative verb; the uncertainty is signaled not by interruption of *es . . . justa* but by displacement of the subject to the end of the sentence and by rising intonation.

Using a copulative verb to mark predication is less flexible than the Greek way of using the definite article to mark what is already envisaged, so that the word without the article becomes a predicate. For this Greek construction is by no means limited to nominative sentences, with the copulative verb either expressed or optionally omitted as in

δίκαιος ὁ λόγος 'The argument is just,'

ἡ σταφυλὶς σταφίς ἐστι 'The grape is turned to raisin,'

ἄξιός ἐσθ' ὁ ποιητής 'The poet is worthy' (Aristophanes, *Aves* 981),

ἱερεῖς εἰσι οἱ κροκόδειλοι 'The crocodiles are holy' (Herodotus 2.69.1).

It extends to other cases, such as αἰρέουσι ἔρημον τὸ ἄστυ, literally 'They catch the city empty' -- i.e., the city was empty when they captured it (Herodotus 8.51.2, similarly 4.114, 9.3.2). εἰς ἔρημον τὴν χώραν ἐμβαλεῖν (Lysias 2.49) can hardly be translated without sacrificing the predication: 'to burst into an empty country,' as if there were no definite article in the Greek passage; the idea is that the country would be empty when they burst in.

We can do the same to μεγάλας τὰς προσδοκίας παρέσχεν (Isocrates 2.7), where the predicate belongs to the object noun: we can translate it 'They afforded great expectations.' Or to show predication, 'Great were the expectations they afforded,' or even omitting the copulative verb, 'Great the expectations they afforded.'¹⁵ By the rules of modern English syntax, that is ex-

¹⁴Y. R. and C. A. Solé, *Modern Spanish Syntax* (Lexington, Mass., 1977), pp. 142-143.

¹⁵In Greek, when the participle of the copulative verb is included, it makes the predication subordinate: ἐσαγαγόντες ἔς

clamatory and archaic, not simply declarative. Normal predication requires the copulative verb introducing the adjective, in English as well as the Romance languages on the whole. The norm was different in the earlier stages of these modern languages, and still more different in the ancient languages.

τὸ μέγαρον ἔσω, ἐὶν μέγα 'bringing [me] inside the hall, which was great' (Herodotus 2.143.2). We could safely make the adjective attributive, 'inside the great hall,' but not 'the hall which they brought me inside was great'; for that would falsify the Greek author's emphasis.

FUNCTOR ANALYSIS: A METHOD OF QUANTIFYING FUNCTION WORDS
FOR COMPARING AND CLASSIFYING LANGUAGES

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It would seem quite reasonable that function words, or functors, should play an important role in subgrouping or classifying languages, because of:

(1) their obvious importance within any given speech variety, (2) their high text frequency, and (3) their tendency towards stability and a low rate of replacement. While functors can be shown to yield qualitative results in both synchronic and diachronic studies, it would also seem advantageous to have a quantitative method for dealing with them. I would like to expound briefly on these three reasons why functors are so important to subgrouping, and suggest a method that can deal with them quantitatively.

Some might wonder why it is necessary to belabor the obvious. All too often comparative studies have centered on phonological or lexical evidence, taking a "shortcut" when there isn't one in comparative linguistics [Teeter (1963:648)], and some have even ignored or dismissed counterevidence presented by grammatical structures.

1. IMPORTANCE OF FUNCTORS.

A language is more readily defined by its grammar than by its lexicon. Let us take the following two examples:

Naka-pay na 'akú sa cashier, ásk-a 'imáw.

I've already bayád-ed the manog-balígya', kutána her.

The grammar of the first is Aklanon (Bisayan, Philippine), while the lexicon is English; the grammar of the second is English, while the lexicon is Aklanon.

Even if 50% of the vocabulary of any given language were to go, that language would still be that language (how much of English is still *English*?!); if even 10% of the grammar (or functors) went, one would suspect he was dealing with a pidgin.

There has been much outrage expressed in the Philippines over a speech variety called "*Taglish*" (Tagalog with a heavy English overlay). While the grammar is still very much Tagalog, it is the lexicon that some find objectionable. With all the tinkering that goes on over national languages, it is rare if so much as one functor is involved (conjunctions excepted), while a massive part of the lexicon becomes "purer" or "more international" as the case may be. All this is so because the grammar and functors are "assumed"; the language is still the language--which is why the label *Taglish* was chosen instead of *Englog*. One never

doubts that it is still Tagalog being spoken--just the *kind* of Tagalog.

2. HIGH TEXT FREQUENCY OF FUNCTORS.

Hockett (1958:264-5) lists four types of grammatical forms that may be classed as functors: *substitutes*, *markers*, *inflectional affixes*, and *abstract governing derivational affixes*. While distinguishing between contentives and functors may be difficult from language to language, forms that have any of the above four functions or attributes may be usefully classed as functors, especially if they form a *paradigm*. The important thing about functors is that a few hundred of them form the grammatical core of a language, while thousands of contentives make up the lexicon. Perhaps an added advantage of working with functors is the limitation on choice. Selecting basic functors is far less tedious--and argumentative--than selecting basic vocabulary.

If one records any text and collates the transcribed results, chances are that even the most basic lexical items (e.g., *eat*, *sleep*, *eye*, *tongue*, *full*, etc.) may not occur more than a few times, but the text would be replete with pronouns, deictics, articles or markers, negatives, interrogatives, and the like. It is thus functors, rather than contentives, that form the core or basic vocabulary of any given language.

McFarland (1974:313-9) ranked 150 morphemes that occurred with the highest frequency out of six texts in each of twelve Bikol area dialects. Of these only twelve were strictly lexical: *say*, *arrive*, *person*, *tell*, *finish*, *name*, *happen*, *house*, *time*, *see*, *good*, *man/male*; the remaining 138 were functors.

3. STABILITY AND LOW PROBABILITY OF REPLACEMENT OF FUNCTORS.

McFarland has stated that the above two factors (high frequency of occurrence and syntactic importance) "would seem to predict high stability, that is, low probability of replacement, for the functors and other restricted-class morphemes." (1974: 121-2). Teeter has also stressed an important fact: "...[D]irect outside influence on grammars is literally impossible, since... each child constructs his own grammar by extrapolating from the utterances he hears. Words are learned, but grammatical rules are invented. (1963:646)

One of the best examples of the stability of functors is the case of Ilongot in the Philippines. Dyen (1965:32) classified it outside of all Philippine groups as an independent member of the Northwest Hesion. Walton (1977:18) classified it as the first to split from Northern Philippine languages; he discounted its higher percentages shared with Southern Cordilleran (Pangasinan and Karaw), with which it does belong, as attributable to mutual borrowing from Pangasinan.

The Ilongot lexicon shows much independent innovation, and hence the interference with its lexicostatistical scores. But if one looks at Ilongot functors, particularly the pronouns and deictics, the similarity to other Southern Cordilleran languages becomes apparent. [See Table 1.]

TABLE 1. ILONGOT PRONOUNS AND DEICTICS COMPARED WITH SOME OTHER MEMBERS OF SOUTHERN CORDILLERAN.

PRON	Kayapa	Inibaloi	Pangasinan	Ilongot	COG?	PROTO-SC
1	hi'gak	si'kaḡ	siák	si'ak	+	*si'ka-ak
1+2	hi'gata	si'kata	sikatá	sikisi	+	*si'ka-ta
2	hi'gam	si'kam	siká	sika	{ + -}	*si'ka-ka
3	hi'gatu	si'kato	sikatú	siya		*si'ka-m(u) *si'ka-tu
1+1	hi'gami	si'kami	sikamí	sikami	+	*si'ka-mi
1+2+	hi'gatayu	si'kito	sikatayú	sikisi	+	*si'ka-tayu
2+2	hi'gayu	si'kayo	sikayú	siki	+	*si'ka-yu
3+3	hi'gada	si'kara	sikará	siyay-də	-	*si'ka-da
<u>DEC-Topic forms</u>						
1	hi'aday	sajay	iyá/sáyay	tu	-	*s()-yay
2	hi'atan	satan	itán/sátay	ta	+	*s()-tan
3	hi'amman	saman	imán/sámay	ma	+	*s()-man
<u>DEC-Locative forms</u>						
1	diyay	ciyay	diyá	'itut	-	*di-yay
2	ditan	citan	ditán	'itat	+	*di-tan
3	diman	ciman	dimán	'imat	+	*di-man

TABLE 2. SOME DIFFERENCES IN FUNCTORS BETWEEN NORTHERN-SAMAR AND WARAY-WARAY(BISAYAN).

<u>Northern-Samar</u>	<u>Waray-Waray</u>	<u>GLOSS</u>
siyá	hiyá	<i>he/she</i>
sirá	hirá	<i>they</i>
si	hi	nominative person marker
si(n)	hin	indefinite genitive marker
sa(n)	han	definite genitive marker
sa	ha	oblique marker
'a:k(u')	'a:kun	<i>mine</i>
'a:m(u')	'a:mun	<i>ours (exclusive)</i>
'a:t(u')	'a:tun	<i>ours (inclusive)</i>

This subgrouping of Ilongot with other Southern Cordilleran languages is further substantiated on the basis of exclusively shared innovations: the replacement of PPH *ña *his/her* by *tu, the *si'ka- nominative pronoun formative, the deictic *tan denoting position near addressee, the deictic *man denoting remote position; the assimilation of PPH *a in the penult to the vowel in the ultima (PPH *ta:[']uh *person* > SC, Ilongot tu'u) or to a final diphthong (PPH *ka:yuh *tree, wood* > PSC *kiyəw > Ilongot kiyu); lexical innovations including Ilongot də:gin, Inibaloi cadin, Pangasinan dālin *earth* (replacing PPH *ta:naq, *lu:paq), Ilongot tawən, Inibaloi tabən, Pangasinan tāwən *sky* (replacing PPH *la:ɲit; note PPH *taqwən *year*).

While any innovation can be borrowed or can spread across language boundaries, functors tend to be less open to large scale borrowing or systematic replacement since functors consist of closed paradigms or restricted-class morphemes. Thus, a single pronoun or verb affix might be borrowed, but not an entire paradigm. The Ilongot functors that do not agree with those of the other SC languages turn out to be either retentions (e.g., siya *he/she* < PPH *siyá, or tu *this* < PPH *i-tú), or independent innovations (e.g., Ilongot siyay-də < PSC *siyay *this* + *-da *they*, or the final -t on the locatives replacing the final consonant of the stem) [note a similar paradigmatic replacement by -y in the Pangasinan topic deictic alternates].

4. THE QUANTITATIVE USE OF FUNCTORS.

A number of scholars, past and present, have used functors qualitatively. Some admirable studies include those of Greenberg (1963) on African languages, and Schebeck (n.d.) on Yuulngu (Australian) languages. However, only two studies to my knowledge have developed a method for dealing with functors quantitatively [McFarland (1974) and Zorc (1977)]. Those interested in the independent evolution and rationale of these methods are referred to those studies.

Basically, McFarland's method, called *morphemic differentiae analysis*, systematically compares all paradigms of all functors between speech varieties. Each difference is scored negatively [see below], and the score reflects the total number of differences observed. Thus the *lower* the numerical score, the closer the genetic relationship posited. Zorc's method, originally called *functor classification*, selects one-hundred basic functors specific to a language family which are observed (or likely) to differ from one speech variety to another. Pairs are scored according to a strict principle of morphological identity (i.e., any difference not directly attributable to a sound change is scored negatively). Thus, the resultant scores reflect the total number of exact cognates, so that the *higher* the numerical score, the closer the genetic relationship posited.

Both methods agree in one principle: once counted, a difference is not counted again. For example [Table 2], the common-noun case-marking particles and the third person pronouns of Northern Samar and Waray-Waray (Bisayan) differ in the replace-

ment of s- in the former by h- in the latter. Further, the first person possessive pronouns in the former end in -' (glottal stop), while those of the latter end in -n. None of these are regular sound changes or correspondences; they don't occur elsewhere in the lexicon or grammar. Rather than subtract a point for *each pair* with the discrepancy, only one point is subtracted for *each discrepancy*. Thus the total negative score by both Zorc's and McFarland's methods would be -1 for the s:-h- difference, -1 for the -':-n difference, -1 for the alternate (short) forms in the N-S case markers, and -1 for the alternate forms of N-S genitive pronouns. A stricter (and less defensible) system of scoring would yield up to -9, instead of -4 for the paradigmatic differences.

The method advocated here may be devised and applied in either of two ways, which may be termed *fine tuning* and *broad-band tuning*. If one is working with closely related speech varieties, one may wish the overall scores among dialect pairs to reflect the greatest amount of difference. Hence, Zorc (1977: 186-91) selected 50 out of the 100 functors which were found to differ. Forms observed to be the same (cognate in every regard) were excluded, e.g., Pan-Bisayan [limá] *five* and [pitú] *seven*; while *one* (reflecting *'əsá, *'isá, *'isa-rá, *sayú', *'isád, *'usád), *two* (reflecting *duhá, *duwá [with unexplained loss of *-h-], or *da-rwá), *three* (reflecting *təlú or *ta-tlú) were included. This, particularly if taken with lexicostatistical comparison [see 5.2 below], resulted in a fine tuning effect.

With widely divergent languages one might like broad-band tuning, i.e., selecting functors that are basically cognate, possibly relaxing the requirement of strict morphological identity. For example, in doing fine tuning, the comparison of Aklanon sanda : Masbate sinda *they* would be scored negatively; in broad-band tuning they could be scored positively [the differences are not the product of regular sound change, but are based on an analogy: si- (singular name marker) : sa- (plural name marker) + -n- ligature + -da *they* (enclitic); they are cognate in part]. However, the principle regarding paradigmatic differences never being counted more than once is applied in both comparisons.

Table 3 is a list of 100 functors devised on the fine tuning model for the Bisayan subgroup of closely related dialects; Table 4 is devised on the broad-band tuning model for the Yuulngu group of distantly related Australian languages. The following classes are useful in drawing up similar lists:

SUBSTITUTES

pronouns (including various case forms, enclitics, alternates),
 deictics (including various case forms and verbal derivatives,

e.g., *go there, come here*),

locationals (*right, left, this side, otherside, above, below, downriver, upriver, downhill, uphill, etc.*),

temporals (*today/now, yesterday, tomorrow, temporarily, later on, earlier, late, early, last (night), etc.*),

low numbers (including indicators of number, e.g., dual or plural affixes) and quantifiers (*all, many, some, few, etc.*),

TABLE 3. LIST OF 100 FUNCTORS CHOSEN FOR BISAYAN (PHILIPPINE) CLASSIFICATION.

1. Top/pro-1	26. Verb/dec-1	51. because	76. day(time)
2. 2	27. Verb/dec-3	52. what?	77. year
3. 3	28. Neg-nominal	53. who?	78. today/nor
4. 1+1	29. Neg-existential	54. whose?	79. tomorrow
5. 1+2	30. Neg-past	55. when (fut)?	80. yesterday
6. 1+2+	31. Neg-future	56. when (past)?	81. later on
7. 2+2	32. Neg-prohibitive	57. where (past)?	82. earlier
8. 3+3	33. CN/topic	58. where (fut)?	83. morning
9. Gen/pro-1	34. CN/indef.gen.	59. why?	84. afternoon
10. 2	35. CN/defin.gen.	60. how many?	85. act.intr.prog.
11. 3	36. CN/locative	61. how much?	86. act.intr.fut.
12. 1+1	37. Existential	62. how (degree)?	87. act.trans.prog.
13. 1+2	38. Name/topic.sg.	63. one	88. act.trans.past
14. 1+2+	39. Name/gen.sg.	64. two	89. act.trans.fut.
15. 2+2	40. Name/obl.sg.	65. three	90. act.trans.perf.
16. 3+3	41. Name/topic.pl.	66. four	91. passive progressive
17. Obl/formative	42. Name/gen.pl.	67. six	92. passive past
18. Top/dec-1	43. Name/obl.pl.	68. ten	93. passive imperative
19. 1+2	44. now, already	69. on top of	94. passive neg. imper.
20. 2	45. still, yet	70. under	95. instrumental future
21. 3	46. first, please	71. across	96. instrumental imperative
22. Loc/dec-1	47. because (excuse)	72. left	97. instrumental potential
23. 1+2	48. don't know	73. right	98. instrumental perfect
24. 2	49. and	74. within	99. local imperative
25. 3	50. if, when(ever)	75. night	100. local neg. imperative

Composition: pronouns (1-17), deictics (18-27), negatives (28-32), common-noun case-marking particles (33-37), personal-noun case-marking particles (38-43), discourse particles (44-48), conjunctions (49-51), interrogatives (52-62), numerals (63-68), locationals (69-74), temporals (75-84), verb suffixes (85-100). Note: a number of forms that are cognate in every regard have been omitted from this list, e.g., oblique pronouns (cognate with genitive), numbers *lima five, *pitú seven, *walú eight, etc.

TABLE 4. LIST OF 100 FUNCTORS CHOSEN FOR YUULNGU (AUSTRALIAN) CLASSIFICATION.

1. Nom/pro-1	26. Nom/dec-1	51. Plural	76. now
2. 2	27. 1+2	52. that way	77. by the way
3. 3	28. 2	53. this way	78. temporarily
4. 1+1	29. 3	54. on this side	79. only, merely
5. 1+2	30. Loc/dec-1	55. up/above	80. vainly
6. 2+2	31. 1+2	56. other side	81. always
7. 3+3	32. 2	57. downward/bottom	82. other [same kind]
8. 1+1+	33. 3	58. down-hill/river	83. other [diff.kind]
9. 1+2+	34. Topic suffix	59. up-hill/river	84. probably, indeed
10. 2+2+	35. Nominative	60. Question particle	85. there! Look!
11. 3+3+	36. Ergative/Instr.	61. what?	86. then, after(wards)
12. Acc/pro-2	37. Accusative	62. why? for what?	87. and
13. 3	38. Genitive/Dative	63. when?	88. indeed, to be sure
14. 1+2	39. Originative (done by)	64. how? by what?	89. because
15. Gen/pro-1	40. Locative (in/at)	65. who?	90. later on [same day]
16. 2	41. Ablative (from)	66. who? [ergative]	91. tomorrow
17. 3	42. Allative (to/towards)	67. what-you-call-it	92. today
18. 1+1	43. Pergressive (through)	68. which?	93. earlier [same day]
19. 1+2	44. Associative (with/by)	69. from where? [assoc]	94. reflexive/reciprocal
20. 2+2	45. Locative Increment	70. from where?	95. causative
21. 3+3	46. all	71. do what? [verb]	96. nominalisation [verb]
22. 1+1+	47. one	72. none [existential]	97. greedy-for
23. 1+2+	48. two	73. not [preverbal]	98. comitative [prefix]
24. Ob1/pro-2	49. three	74. not having [suffix]	99. past potential
25. -3	50. Dual suffix	75. having [suffix]	100. having-many [suffix]

Composition: pronouns (1-25), deictics (26-33), case-marking suffixes (34-45), numerals and quantifiers (46-51), locationals (52-59), interrogatives (60-71), negatives (72-74), existentials (74-75), discourse particles (76-89), temporals (90-93), verb suffixes (94-100).

interrogatives (most forms and derivatives, including the verbal *do what?* and the filler *what-you-may-call-it*),

MARKERS:

case, person, number, and class markers; discourse particles (that indicate mood, attitude, belief, time, e.g., *maybe*, *indeed*, *don't know*, *hopefully*, *vainly*, *still*, *yet*, *only*, *just*, *so there*, etc.); negatives; affirmatives; connectives or conjunctions; existentials; pseudo-verbs or preverbs (e.g., *know how*, *can*, *want*, *like*, *may*, *might*, *should*, etc.);

INFLECTIONAL AFFIXES:

voice, tense, aspect, mode, case, number, gender, class, etc.;

DERIVATIONAL AFFIXES:

noun-, verb-, adjective-, and adverb-forming, etc.

5. USEFULNESS OF FUNCTOR ANALYSIS.

The following summarize some of the benefits derived from the use of functor analysis:

1. making explicit the relationship(s) of languages based on synchronically-derived evidence, although it can be posited that the scores must correlate with historical developments;
2. devising a hypothesis about the genetic relationship(s) of speech varieties, which can then be tested by the isolation and evaluation of exclusively shared innovations [a reasonably sound subgrouping hypothesis helps to sort out such problems as borrowing of or counterexamples to proposed innovations];
3. comparing the results of functor analysis with other methods, such as lexicostatistics and the isolation of shared innovations; agreements would serve to substantiate proposed groupings, while disagreements show the directions of influence, interference, borrowing, and the like.

5.1. Schebeck (n.d.) offers a subgrouping of Yuulngu languages of northeastern Arnhem land. He shows how one of the "native theories" correlates closely with the functors. While the subgrouping presented is reasonably sound, it can be made more explicit. Based on data gathered from Schebeck (Id.), Heath (1976), and my own research, scores have been computed for the agreement of several language pairs on the first 50 items from Table 4 [adequate data is not currently available to do the full 100-functor comparison]. These scores are presented in Table 5. They show that at least three of Schebeck's subgroups (DL, DA, DI) form a dialect chain, while three other groups (DK, DN, NN) each form a discrete subgroup equidistant from all other Yuulngu languages. This quantification allows a more refined statement of Yuulngu interrelationships, and probably of their historical development. [I would require more data in these and the other languages to make any conclusions; the present statement may be regarded as a useful hypothesis.]

5.2. Zorc (1977) offers a subgrouping of 36 Bisayan speech varieties based on the agreement of three different methods: lexicostatistics, functor analysis, and exclusively shared innovations. Generally all three agreed in delineating subgroups,

TABLE 5. FUNCTOR SCORES FOR SOME YUULNGU LANGUAGES BASED ON A 50-ITEM COMPARISON. [See Table 4.]

Liyagawumirr (DL)

48 Djambarrpuyngu (DL)

42 43 Gumatj (DA)

39 40 37 Dalwangu (DI)

26 25 23 24 Ritharrngu (DK)

21 22 23 20 21 Rirratjingu (DN)

16 17 18 17 20 24 Goipa (NN)

Note. The two-letter abbreviations refer to Schebeck's posited subgroups.

TABLE 6. RELATIONSHIPS OF KAMAYO TO VARIOUS LANGUAGES OF EASTERN MINDANAO AS SHOWN BY LEXICOSTATISTICS AND FUNCTOR ANALYSIS.

	Surigao	Butuan	Mansaka	Mandaya	Davao	Mamanwa	Tausug
100 lex.	80	78	76	81	78	66	62
100 func.	56	66	77	?	68	61	54
Differs:	-24	-12	+1	?	-10	-5	-8

especially at the topmost node--five branches split from Proto Bisayan (West, Banton, Central, Cebuan, and South).

However, one problem case was the position of the Gubat dialect of Southern Sorsogon (Bikol Province). Lexicostatistically, the highest scores of Gubat were with Sorsogon (83%) and with Masbate (78%); its scores with Northern Samar and Waray were somewhat lower (73%). The functor scores derived in the overall study were generally *lower* than the lexicostatistical scores: for closely related dialects from 2 to 6 points, for distant dialects from 10 to 25 points. Bearing in mind that the functor list was devised to show differences (fine tuning), the proximity and comparability of lexicostatistical and functor scores originally came as some surprise. However, the most surprising result of all was that the functor score of Gubat compared with Northern Samar (82%) was nine points *higher* than its lexicostatistical score (73%). Based on the conservative nature of functors, one is led to make historical inferences. The discovery of several exclusively shared innovations and of shared contrastive features confirmed these inferences [Zorc (1977:272-5)]. A group of Northern Samar speakers had migrated across the rough San Bernardino Strait, and subsequently lost all contact with the Waray group. They began to borrow from the more prestigious Bikol language.

While the lexicostatistical scores are thus inflated, the grammatical system (as reflected in the functors) shows the underlying genetic relationship of this community with the Warayan subgroup, further confirmed by (yet supportive of) the exclusively shared innovations.

5.3. Zorc (1977:18-9,194,287-8) put Kamayo, a language spoken in southern Surigao, into the Mansakan family on the basis of its high functor scores with Mansaka. Recently, some studies have cast doubt on this subgrouping [Walton (1977:27), Gallman (1977:29-31)] based on high lexicostatistical scores with some Bisayan languages, and the failure of Kamayo to share in some phonological innovations attributable to Mansakan languages. [Zorc found that Kamayo did not share enough lexicon (that could not be discounted as borrowings or retentions), functors, or innovations for inclusion within the Bisayan family.]

Table 6 shows the differences between the lexicostatistical and functor scores for Kamayo. While Kamayo shares 80% of vocabulary from the Swadesh 100-meaning list with Surigao (its northern Bisayan neighbor), 81% with Mandaya (its southern Mansakan neighbor), and 76% with Mansaka, its functor score with Surigao is 24 points lower than its lexicostatistical score, but 1 point higher with Mansaka. [Data is not yet available to compute the full functor score with Mandaya, but it should be above the 77% score of Kamayo:Mansaka (based on the skewing of the lexicostatistical scores and the agreement of the functors now available for comparison)]. Thus, the lexicostatistical score with Surigao can be discounted as inflated, due to borrowings from each other and mutually from Cebuano (the lingua franca in that area). But the functor score with Mansaka must be taken as a fairly close indication of the genetic relationship since it is one point higher than the lexicostatistical score. Two points need note:

First, while no Bisayan dialect has a functor score higher than 66% with Kamayo, this relatively high score is an indication that the Bisayan and Mansakan groups are closely related. They are both immediately descended from Proto Central Philippine [Zorc (1977:19,31-3,223-40)]. Kamayo is problematic then because it neighbors both Bisayan and Mansakan language communities, and it has reasonably high scores with members of each--although its functor scores are clearly skewed towards members of the Mansakan subgroup.

Second, Kamayo has some exclusively shared innovations with the Mansakan group. One is the second person plural oblique pronoun *mayú, reflected in the language name [ka-mayú] *to you*, clearly a distinguishing feature for a speech variety located in Bisayan territory where [ka-niyú] or [ka-nínyu] are used. Other innovations include functors such as Kamayo, Mansaka ya'án *he/she*, na'án *his/her*, da *now, already*, 'aw *if*, 'a-du'ún *today*, Kamayo ka-lin-tu'ú, Mansaka ka-rin-tú *right(side)*, Kamayo ki-suúm, Mansaka ki-səram *tomorrow*, and the syncope of the penult vowel in the second person singular oblique pronoun, Kamayo, Mansaka ka-nmu *your* from *ka-nímu (attested in Bisayan). Mansakan verb morpho-

logy has a paradigmatic (but otherwise irregular) replacement of PPH *n- by Mansakan y- to show perfective aspect, e.g., *nag- > Mansaka, Kamayo, Davaw yag- (active past), *naka- > Mansaka, Kamayo, Davaw yaka- (active potential past), *naga- > Mansaka, Kamayo, Davaw yaga- (active progressive), and *-in- > Mansaka, Kamayo -i(y)- (passive past infix). There are some exclusively-shared lexical innovations, such as the replacement of PPH *hapúy *fire* by Mansakan *'atulun (Mansaka 'aturun, Kamayo 'atuun) [note Bisayan and Bikol reflect *kaláyu]; the complex reformation of PPH *kukúh *finger nail* as Mansakan *kuikulhun (Mamanwa kulkulhun, Mansaka kukurun, Kamayo kukuhún); the replacement of PPH *'anák or *'unáq *child* by Mansakan *'ísə' (Mansakan 'isə', Kamayo, Davaw 'ísu') [note Bisayan and some other Southern Philippine languages reflect *báta']. Other lexical innovations for which Kamayo has cognates include Mansakan *hambun *afternoon*, *sugbu *bathe*, *pəsa' *bone*, háku' *cough*, *tigám *know (how)*, *hikəl *laugh*, *tának *lose*, *ma-da'ig *many*. There is also contrastive evidence that while some forms are not innovations limited to Mansakan, not one cognate is found in a single Bisayan dialect, e.g., *bubáy *woman*, *'utāw *person*, *sirān *they*, *yaŋ *topic marker*--cognates of these are found in Kamayo, Mansaka, and other speech varieties that may be subgrouped together as Mansakan.

Thus, Kamayo belongs in a subgroup with Mansakan languages, although at a higher order since it fails to share at least one qualitative phonological innovation--the assimilation of *C1 clusters to Mansakan *11. [The exact position need not be discussed here, but is posited in Zorc (1977) and Gallman (1977).] This subgroup is substantiated initially on the basis of functor analysis, and, most importantly, exclusively shared innovations. But the indication of this subgrouping given by functor analysis is not to be disregarded or dismissed. It helps sort out the directions of borrowing (almost exclusively *from* Bisayan) and certain irregularities (e.g., the failure to share in some innovations).

6. CONCLUSIONS.

Comparison of the results of functor analysis and other methods such as lexicostatistics, brings to light secondary contacts: high functor scores (as compared with lower lexicostatistical scores) indicate a close genetic relation undone by long-term contact. Similarly, low functor scores (compared with high lexicostatistical scores) can show the directions of borrowing across linguistic boundaries, i.e., the grammatical systems of languages prove to be more conservative.

It is suggested that synchronic or historical studies would profit from the use of functor analysis in conjunction with other established methods, allowing initial working hypotheses about language interrelationships, and giving considerable weight to the classification(s) thereby obtained, where substantial lines of agreement are found.

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VII

LINGUISTIC HISTORY AND THEORY

PILOT AND PARASITE DISCIPLINES IN THE DEVELOPMENT OF LINGUISTIC SCIENCE*

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0. *Introductory Remarks*

In recent years it appears that linguistics has become a kind of pilot discipline within the social and behavioural sciences, to the extent that observations made by Oswald Ducrot some ten years ago seem to be widely accepted today. Ducrot had noted the following:

La linguistique peut-elle proposer ses méthodes en modèle aux autres sciences humaines? Il devient de plus en plus banal aujourd'hui de donner à cette question une réponse positive. La sociologie, l'ethnographie, la psychanalyse se sont habituées à considérer une institution, un mythe ou un rêve comme étant dans un large mesure, des ensembles signifiants dont il faut, avant tout, établir la signification; la linguistique, étude des langues naturelles, c'est-à-dire de purs systèmes de signification, peut donc, sans paradoxe, prétendre être le paradigme de la science humaine ...¹

Following the almost general acceptance of post-Saussurean structuralism after World War II, in Europe as well as in North America, disciplines such as anthropology (cf. the work of Lucien Lévi-Strauss, but also of those following the Sapirian ethno-linguistic tradition) and psychoanalysis (e.g., Jacques Lacan) adopted important concepts and procedures of investigation from linguistic science. With the advent of Chomsky's theory of language it appears that those branches of psychology which, in one way or another, concern themselves with language have also regarded linguistics as a possible pilot discipline (e.g., Greene 1971), though it cannot be said that psychologists of language have generally accepted this view. The contemplation of such a position for linguistics within the social and behavioural sciences represents a major change of perspective, however, it was not too long ago that linguistics was a parasite discipline, i.e., a field of study which was ready to follow, at times to a considerable degree, the lead of other fields, first the natural sciences, later the social sciences.

* Although I am quite aware of the fact that 'parasite' has almost exclusively pejorative connotations, connotations actually not contemplated here, I would like to retain the term here for its contrastive effect.

The present paper concerns itself with the various extralinguistic influences that the science of language has undergone,² from the time it began to evolve as an autonomous discipline, namely, from around 1800 onwards, to the time it became a field of inquiry making an impact on other disciplines.

1.0 *The Thesis*

Linguistics, at least in the way we now tend to understand it, developed at the beginning of the 19th century. During earlier centuries, the study of language was closely connected with other intellectual or practical activities of the day, such as philosophy, rhetoric, pedagogy, etc. Linguistics as an autonomous discipline, as even Humboldt conceived it — cf. his letter to Bopp of 21 January 1821 (Bopp 1974:66) — did not develop before 1800, though anticipatory efforts in this direction could be cited.

Modern linguists are used to borrowing, particularly within the so-called hyphenated branches, technical terms and concepts, as well as matters of procedure, from other disciplines, both adjacent and seemingly remote, modifying such borrowings according to the demands of their particular object of study and incorporating them in their theoretical framework. Indeed, in our largely interdisciplinary age it seems quite natural to do so. Moreover, it appears that many linguists of today are willing to entertain the idea of abandoning the autonomous status of linguistics altogether, to wit Chomsky's proposal to incorporate linguistics into an overall general psychology.

The 19th-century pioneers of our field faced other problems; they had to struggle in order to establish the study of language as a discipline apart from the traditional associations with the teaching of (mostly Latin) grammar, the 'collegium logicum', elocution, the compilation of dictionaries, and so forth. With this aim in mind, what was more natural than to look around and to observe those disciplines which at the time had already gained general recognition because they had defined their field of investigation and established a methodology of their own?

2.0 *The Evidence*

It is not an easy task, though one of the requirements for historical research regarding the evolution of the discipline, to recreate in some way the intellectual and, wherever desirable, the socio-political atmosphere of the early 19th century. Indeed, much reading outside the field of linguistics is necessary to do a reasonably adequate job. Happily, linguists have on occasion indicated their sources of inspiration, and at times suggested what particular discipline outside their own field they wished to imitate, thus at least supplying hints to the linguistic historiographer as to what aspects of the *Zeitgeist* he would have to inspect more closely in order to obtain a better understanding of particular stages of development in linguistics.

One such hint we find in Friedrich Schlegel's celebrated *Ueber die Sprache und Weisheit der Indier* of 1808, where he says (p.28) that the science of language he has in mind should be a kind of comparative grammar in the manner of the procedures fol-

lowed by Comparative Anatomy:

Jener entscheidende Punkt aber [in the establishment of language relationships], der hier alles aufhellen wird, ist die innre Structur der Sprachen oder die vergleichende Grammatik, welche uns ganz neue Aufschlüsse über die Genealogie der Sprachen auf ähnliche Weise geben wird, wie die vergleichende Anatomie über die höhere Naturgeschichte Licht verbreitet hat.³

Heinrich Nüsse, in his 1962 monograph on Schlegel's theory of language (p.42), argued that this reference to comparative anatomy was nothing but a metaphor that offered itself at the time without serious consequences ("unbelastet"). However, if we investigate Schlegel's biography more closely, we will find ample reason to believe that he intended his book to become something like a program for linguistic research, something which is evident from the text itself, when he states, toward the end of the chapter on language (p.84):⁴

Genug, wenn hier nur in das Ganze Ordnung gebracht und befriedigend angezeigt ist, nach welchen Grundsätzen etwa eine vergleichende Grammatik und ein durchaus historischer Stammbaum, eine wahre Entstehungsgeschichte der Sprache, statt der ehemaligen erdichteten Theorien vom Ursprunge derselben, zu entwerfen wäre.

That the reference to comparative anatomy is by no means accidental may also be gathered from Schlegel's theoretical argument, in which the investigation of the (grammatical) structure of language and the procedure of comparing morphological entities play a central role (cf. Schlegel 1808:27-28, 38, 41, 44ff., etc.).

Similar references to the natural sciences can be found in the work of Franz Bopp, who, in his *Conjugationssystem* of 1816, followed Schlegel's lead to a considerable extent. Emphasis was placed on the comparison of morphological structures, on analysis (note this term), not on a demonstration of the evolution of the languages under investigation. It is not surprising therefore that Bopp's grammatical works - like Cuvier's anatomical studies - remained essentially static, almost to the extent of being ahistorical (cf. Koerner 1975:729-35, for details).

The same cannot be said of the work of Jacob Grimm, for example, though here too we may discover references to the natural sciences and, curiously enough (since he did not share his 'static' and in fact 'taxonomic' views) to Linnaeus' botanical work. In the preface to the second edition of the first volume of his *Deutsche Grammatik* of 1822 Grimm makes such a direct reference, and his reviewer, Georg Friedrich Benecke, invites a comparison between these two fields of study, when he calls on scholars in the study of language to follow Grimm's lead,

... um die Sprachwissenschaft sich dieselben Verdienste zu erwerben, welche die Nachfolger des unsterblichen Linné sich durch ihre mehr oder minder begränzte Untersuchungen um die Naturwissenschaft erworben haben. (Benecke 1822:2007-08)

The attempt to imitate the natural sciences and possibly compete with their scientific rigor, something which continued in various forms until the end of the 19th century, is clearly stated in other passages of Benecke's review for instance, when he says, commenting on this first volume of Grimm's *Germanic Grammar* devoted to phonology and morphology:⁵

Eine solche Darstellung läßt sich nicht geben ohne die sorgfältigste und genaueste Untersuchung der ersten und einfachsten Bestandtheile. Dieser Theil der Naturgeschichte - denn so haben wir nun die Grammatik ansehen gelernt - hat seine Anatomie, seine Physiologie, seine chemische Analyse, so gut wie die übrigen. (Benecke 1822:2002-03)

The reference to the natural sciences, particularly those concerned with analysis and, to borrow a modern term, 'descriptive adequacy', is obvious; *historische Grammatik* is earlier (p.2002) identified with *Naturgeschichte* (emphasis in the original). We may draw the conclusion that Grimm and his contemporaries were not only aware of these disciplines, notably anatomy and botany, but also felt a sufficient justification to follow their example and to make use of at least some of their notions, technical terms, and methods of analysis.

Bopp, who titled his analyses of Indo-European grammatical categories 'Vergleichende Zergliederung ...', wrote, in his review of volume 2 of Grimm's *Deutsche Grammatik* (1826):

Die Sprachen sind ... als organische Naturkörper anzusehen, die nach bestimmten Gesetzen sich bilden, ein inneres Lebensprinzip in sich tragend sich entwickeln, und nach und nach absterben. ... Eine Grammatik in höherm, wissenschaftlichem Sinne soll eine Geschichte oder Naturbeschreibung der Sprache sein; sie soll, ... besonders aber naturhistorisch die Gesetze verfolgen, nach welchen ihre Entwicklung ... vor sich gegangen. (Bopp 1827: 251)

Other passages could be cited in which Bopp makes explicit references to the natural sciences. The emphasis on structure, already implicit in his work of 1816, becomes explicit in the English version of the linguistic portion of this book written in 1819 while he undertook research of Sanskrit in London: *Analytical [!] Comparison of the Sanskrit, Greek, Latin, and Teutonic Languages, shewing the original identity of their grammatical structure [!]* (Bopp 1820).

I do not know what motivated a certain Jean-Louis Le Bel to entitle his 300-page grammar of Latin *Anatomie de la langue latine* (Paris: Panckoucke, 1764), though the principle of analysis stated on page 24 of his book, "il n'y a pas d'assemblage dont les parties n'aient existé séparément avant d'être assemblées", may give a hint regarding the parallel he envisaged between morphological composition in grammar and anatomy.⁶ From around 1800 onwards, however, references to the natural sciences and the actual borrowing of concepts and terms from them become more frequent in the linguistic literature.

It appears that the Danish antiquarian Georg Zoega created the

term 'phoneticus' in 1797 (cf. Zwirner 1970:8); in 1803 August Wilhelm Schlegel introduced the term 'vergleichende Grammatik' (comparative grammar), possibly formed by analogy to 'vergleichende Anatomie' into linguistics, a term adopted by Johann Severin Vater two years later in his *Lehrbuch der Allgemeinen Grammatik* (Halle/S.: Renger, 1805) as title heading of a particular section (p.15). It seems that it was Vater who first used the term 'Linguistik' in a short-lived journal he and Friedrich Justin Bertuch edited in Weimar, *Allgemeines Archiv für Ethnographie und Linguistik* (1808). The term became more generally used after the publication of Sausure's work in 1916, though it was used by such scholars as Humboldt, Pott, and others in the first decades of the 19th century. 'Linguistik' was certainly modelled after terms such as 'Botanik', 'Physik', 'Mathematik', thus hinting at the natural sciences. Terms such as 'Struktur' or 'Bau' and 'Analyse' or 'Zergliederung' betray the fact that they have been taken over from the scientific nomenclature of the day. Biological metaphors abound in the literature of 19th-century linguistics, of which 'stem' and 'root' (though where the latter is concerned, an earlier influence of Hebrew grammar has been claimed) are the most obvious. Other terms, such as 'assimilation', which according to Pott (1836:5) was already current in the literature at the time when he introduced (ibid.) the term 'Dissimilation', and 'structure' (cf. Schlegel 1808) became 'clés de voûte' in the linguist's terminological kit.

It could also be shown that discovery procedures - not only the term 'analysis' - were largely derived from the natural sciences. Here Cuvier's principle of the correlation of forms, which, on the basis of an assumed interrelationship between the parts and the whole, allows him to propose the reconstruction of petrified organisms (cf. Koerner 1975:730-31, for pertinent quotations from Cuvier), may be cited as a particularly revealing example. Note that F. Schlegel proposed to reconstruct the original proto-language on the basis of the existing 'daughter languages', adding historical perspective to Cuvier's static view (and the assumption of the fixity of species).

If Bopp can be said to have established a largely static framework of comparison of linguistic structures, Grimm advocated a dynamic, historical approach. The latter grew more powerful a generation later, when August Schleicher combined these two traditions, adding to them the Humboldtian line of thought concerned with language typology. From the early 19th century onwards, geology and biology developed rapidly to become leading disciplines by 1850. At the same time, botany continued to play an important role in scientific discovery. This is reflected in the writings of Schleicher, who may be said to best represent the mid-19-century generation of linguists.

In an 1855 article on the history of the Slavic language family, Schleicher refers, in the introductory paragraph, to the work of Matthias Schleiden, the leading botanist in Germany at the time, arguing that the science of language must adopt the study of 'entwicklungsgeschichte' as the main guiding principle and indeed sole possibility for obtaining scientific insight into a given object of investigation. Linguistics or 'Glottik', as he preferred

to call it, was in his view a natural science, since languages were natural organisms and since the science of language was a part of the natural history of man (Schleicher 1858 [1855]: 1). In other words, Schleicher pushed the analogy between linguistics and the natural sciences to its extreme; he was well informed about botany and physiology and - contrary to Hoenigswald's (1965:5) claim - well informed about Darwin's predecessors, publishing in fact two family tree diagrams in two articles, in German and Czech respectively, in 1853, six years before the publication of *Origin of Species* (cf. Priestly 1975, for details).

Because of the development not only of the discipline itself but also of other natural or social sciences, linguists have long since abandoned Schleicher's position. What should be recognized, however, is the fact that Schleicher, on the basis of his particular conception of linguistic science, developed a framework of scientific investigation which we may call a 'paradigm' in the Kuhnian sense of the word. It is not sufficient to note that ideas found in the work of Bopp, Grimm, Humboldt, and others, such as 'Lautgesetz', 'assimilation', 'dissimilation', etc. became systematic parts in his theory of language and its development. What is more important is that Schleicher's conscious adoption of terms, concepts, and methodological principles from the natural sciences of his day, especially botany and geology, gave linguistics a status which it did not have before. Schleicher was not a creator of most of the terms usually associated with his name in the literature, such as the asterisk (cf. Koerner 1975b, for a history of this term), but it was he who assigned them a place in an overall theory of language.

Schleicher introduced the term 'Morphologie' into linguistics, in a programmatic article published in 1859, and it was he who first developed a formal, mathematical notation of morphological typology, which was strongly opposed by the 'mentalists' of his day, especially Steinthal, but which anticipates 20th-century work in the field. It is in Schleicher's work that we find the first comprehensive formulation of the family tree concept, rigorous application of the sound law and analogy principles, the so-called starred forms, and the procedure of reconstruction of proto-forms in Indo-European linguistics. In fact Schleicher's unerring belief in the validity of his principles led him to write a short fabel in Proto-Indo-European, something which was not meant to cause modern linguists to chuckle, but which constitutes a consequential step in his theoretical argument. Indeed, not only were Schleicher's immediate successors, the *Junggrammatiker* largely indebted to his pioneering work; so are historical linguists up to the present day.

It is true that the Neogrammarians, from about 1880 onwards, shook off the Schleicherian view of language as a natural organism. Instead they tended to associate the study of language with disciplines other than the natural sciences. However, this change of ideology did not produce a significant change in the day-to-day operations of the linguist (cf. Beneš 1958:123;) so we may at least debate the argument that it was the Young Grammarians who, from 1876 onwards, revolutionized the discipline (cf. Koerner 1976b).

Toward the end of the 19th century other disciplines which had developed during roughly the same period as linguistics, notably psychology and sociology, became widely recognized fields of study, to the extent that linguists began incorporating certain of their findings into their arguments. This can be clearly seen in the writings of scholars who, like Hermann Paul and Baudouin de Courtenay, were particularly interested in establishing general principles of linguistic investigation. Ferdinand de Saussure, some ten years younger than the two, struggled with questions of general linguistic theory from 1890 onwards, and it is in his posthumous *Cours* that we find frequent references to those disciplines of the day that had made headway, such as political economy, sociology, and psychology. And, similar to Schleicher's incorporation of terms and procedures of analysis from the natural sciences, Saussure, in borrowing from the nomenclature of those disciplines which had made significant advances in his time, eventually developed a new framework for linguistics, in which the study of the historical development of languages was to be merely one province.

3.0 *Concluding Remarks*

In a paper delivered before the Linguistic Circle of New York in 1945, Ernst Cassirer noted that linguistic method in the 19th century, having to grope its way and to proceed hesitatingly and tentatively (because no 'paradigm' had as yet been established we might add), couldn't but develop with the help of other disciplines:

It was natural that, in these first attempts, linguists looked for the help and guidance of other branches of knowledge that, long before, had established their methods and principles. History, physics, psychology could be used for this purpose. (Cassirer 1945:99-100).

Cassirer might have done better if he had named botany, biology, comparative anatomy, and geology instead of fields such as history and physics, of which only the latter came to exercise a noticeable influence on linguistics in the 20th century, though not in the 19th. His general idea, however, that those wishing to establish the study of language as a field of scientific research comparable to other disciplines of the day had to imitate their terminology and methodology, is, however, in full agreement with my findings. The 19th-century linguists' approach to the problem might be called, without reference to the negative connotations of the term, parasitic - Saussure would have called it 'unilatérale' (cf. *Cours*, p.21) - and perhaps, with reference to C. S. Peirce, 'abductive'.

In the 20th century, especially with the advent and eventual success of the Saussurean 'paradigm', structural linguistics began to change from a largely 'parasitic' discipline, i.e., a field borrowing terms and concepts from other fields, to a pilot discipline, i.e., a field of scientific investigation offering its insights, methods, and results to other fields of study.

NOTES

- 1 Oswald Ducrot in his review of A. J. Greimas' *Sémantique structurale* (Paris: Larousse, 1966) in *L'Homme* 6 (1966), p. 121.
- 2 I have been aware of only one exception to the general rule that linguistics was under the spell of the natural sciences during 1800-1880, namely, Schleicher's influence on the biologist Ernst Haeckel (cf. Koerner 1976c). Greenberg (1973:51) however cites from the work of the 19th-century historian Sir Henry James Sumner Maine (1822-88), a close contemporary of Schleicher, in which Maine refers to the Comparative Method of linguistics as a model for comparative jurisprudence (cf. Maine 1871:80).
- 3 I quote the German original since the English rendering by Ellen J. Millington reprinted in the 1977 re-ed. of Schlegel 1808 is rather vague (1849:439); the same holds true of the subsequent quotation (p.464).
- 4 Schlegel came to Paris in 1802 in the hope of establishing a German Academy in exile. The person he approached with his proposal was George Cuvier, who, though only three years his senior, had already become President of the French Academy of Sciences and a very influential figure in the educational system under Napoleon. If we consider the fact that Schlegel secured a letter of recommendation from Cuvier in the same year, and that Cuvier's 5-volume *Leçons de l'anatomie comparée* appeared in Paris during 1800-05, we might no longer be surprised to find an explicit reference to comparative anatomy in Schlegel's book.
- 5 Grimm, in the Preface to the first edition (1819) of his *Deutsche Grammatik*, had stated this explicitly when he suggested (p.XII): "Wird man sparsamer und fester die Verhältnisse der einzelnen Sprachen ergründen und stufenweise zu allgemeineren Vergleichungen fortschreiten, so ist zu erwarten, daß bei der großen Menge unsern Forschungen offener Materialien einmal Entdeckungen zustande gebracht werden können, neben denen an Sicherheit, Neuheit und Reiz etwa nur die vergleichende Anatomie in der Naturgeschichte stehen."
- 6 However, I own a copy of a 36-page statement by Jean-Nicolas Jouin de Sauseuil, in which the same term appears on the title-page, namely, *Anatomie de la langue françoise, ou examen philosophique et analytique* (Paris: Author, 1783). Here, one finds the term 'structure' being used alongside 'système' (p.12), though there is no explicit reference to natural science.

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WHO *DIDD* WHAT IN AMERICAN LINGUISTICS?
[Discovered, Invented, Defined, Decided]

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In the America of the 1970's, there is a widespread nostalgia for the 1950's, a yearning for the "good old days" some twenty-odd years ago. Specifically related to linguistics, the recent wave of interest in Kuhn's paradigms and the resulting debate over their applicability to our field (see Percival 1976 and Pearson 1978, among others) have generated a reappraisal of linguistic events of the past twenty years.

Against this background, it seems appropriate to raise once again the question: "Do we need a history of American linguistics?" I believe we do, I believe we do not yet have one, and I would like to suggest a tentative format for such a history.

Let me discuss these last three points separately. First, the need for a history of American linguistic achievements is, broadly viewed, no more than a search for our "roots," our intellectual antecedents. Without an awareness of whence we have come, we are ill-prepared to judge where we have got to and whither we are going. Worse yet, younger colleagues are doomed to waste valuable intellectual energy on re-discovery and re-invention; a professor of mine once remarked (off the record) that "linguistics seems very like a squid--an organism propelling itself rapidly backward, leaving behind a trail of ink." He was referring, I gathered, to the flurry of frenzied generative activity during the 1960's, which may well turn out to have constituted a "revolution," though less in the Kuhnian than in the etymological sense: from *re-* + *volvere*, a 'rolling back.'

What we are lacking, I submit, is a clear picture of the period Twaddell has called "a rather splendid third of a century" (1975: 221) beginning about 1925. Some senior linguists, who could have evaluated that period for us, were apparently still suffering from what Hockett diagnosed as "sudden and almost total amnesia" (1975: 233, fn.), contracted some time around 1957.

There were, of course, dozens of books and articles written during and about that third of a century, enough to keep even the most avid reader occupied for years. Joos' *Readings*, Sebeok's *Portraits*, Hall's "American Linguistics 1925-1950" and "American Linguistics 1950-1960," the volumes of *Current Trends*, the final chapter of Robins' *Short History*--these would seem, at first glance, to constitute the chronicle of an era. But one comes away from many of these works agreeing with Hoenigswald that

"What we find in the connecting text of Joos' Readings (1957) or in the Cahiers Ferdinand de Saussure, for instance, is surely not all historiography ... Reminiscing, fighting old battles over again, recapturing the atmosphere in which one's earlier work was done ... --all these amount to something rather different" (1974: 346-47).

Others of these sources attempt to explain the developments of 1925-1957 in terms of competing or successive "schools," often implying linear progress toward one or another linguistic goal, through a series of "breakthroughs."

It is my contention that the history of American linguistics is rather more obscured than revealed through reference to "revolutions," "breakthroughs," and "schools." What I would like to see, and to show to my own students of linguistics, is a variation on the tables which are used to display "technological advances of the last 100 years" or "chemical discoveries of the twentieth century." Such charts normally list, seriatim, those discoveries and inventions whose impact was considered substantial, and the additional inclusion of definitions and decisions would, I believe, make such a model suitable for displaying the achievements of American linguistics.

Having selected 1925 as a not entirely arbitrary starting point for this prolegomenon to a historiography, I would like to begin by referring to Sapir's "Sound Patterns in Language," which appeared in the first volume of Language (reprinted in Joos 1957). As Robins has noted (1967: 207), it is in this article that we find Sapir's clear espousal of the psychological view of the phoneme. I will return to the phoneme later on; for now, let us label Sapir's 1925 achievement as a decision.

Four years later, Sapir was ready to determine "in what sense linguistics can be called a 'science'" (1929; reprinted in Sapir 1949: 68). His conclusions stressed the interrelation of linguistics and the other social sciences and included a definition: "Language is primarily a cultural or social product and must be understood as such" (p. 76).

Meanwhile, Bloomfield was drastically revising his 1914 *Introduction to Linguistic Science*, in order, as Robins puts it, "to bring its theoretical basis in line with the mechanist outlook of such behaviourists as A. P. Weiss" (p. 207). In the second volume of Language (1926), Bloomfield published the first fruits of his mechanistic reorientation, "A Set of Postulates for the Science of Language." As Joos puts it, "The Postulates have been called the Charter of ... descriptive linguistics" (Readings, p. 31), as much because of the fifty-odd formal definitions presented therein as because of the connecting text between them. To cite only one example, Bloomfield's definition "The totality of utterances that can be made in a speech-community is the language of that speech-community" (reprinted in Joos, p. 26) is followed immediately by two significant, perhaps prophetic, statements: first, "We are obliged to predict; hence the words 'can be made'." This

constitutes a decision which adds some thirty years to the often misconceived time-depth of linguistic concern with the "creative aspect" of language use. Bloomfield's second statement is "Where good informants are available, or for the investigator's own language, the prediction is easy." I am tempted to class this as a discovery--namely the discovery that generating one's own data and examining one's own intuitions is a lot less strenuous than doing field-work.

Bloomfield was not, of course, advocating armchair analysis, as is clear from the tasks he set for himself and his students during the 1920's and after. Stemming from this period, the many analyses of native languages of the New World amount to a series of individual discoveries which I cannot catalog in this brief space. But the uncovering of language structures and language relationships depended upon discovery procedures which, themselves, constituted a significant invention.

These procedures, in their turn, were founded upon two fundamental precepts (or percepts--and thereby hangs a tale) developed and fine-tuned during the 1930's and 1940's: the phoneme, to which we will now return, and the morpheme. Tracing the origins of the phonemic principle to its ultimate sources would take us beyond the scope of the present paper, but the phoneme was being defined and redefined, often rather vigorously, during the 1930's. Whether the phoneme, in fact, counts as a discovery or an invention was the question raised by Twaddell in 1935: in his article "On Defining the Phoneme," Twaddell concluded that debate over the physical vs. psychological reality of the phoneme was unproductive, because "the purposes to which the term may be put in our discipline are served equally well or better by regarding the phoneme as an abstractional, fictitious unit" (Joos, p. 67). I would count this among the more significant decisions.

Once opening the issue of the phoneme, I am obliged, in spite of space limitations, to try to do justice to a host of related discoveries, inventions, definitions, and related decisions of the 1930's and 1940's. I refer to the considerable attention devoted to the concept of levels of analysis (or of language), relationships among those levels, and elements between levels.

At the Fourth LACUS Forum a year ago (1977), Hans Bergan had occasion to refer to "the universally acknowledged division between phonology and grammar, which Hockett calls dual patterning" (p. 357). Just how universal the acknowledgment is may be debated. But the phenomenon of "duality of patterning" may be reckoned a discovery, leading, in turn, to a far-reaching decision: in his "System of Descriptive Phonology" (1942; reprinted in Joos 1957), Hockett argued that "there must be no circularity; phonological analysis is assumed for grammatical analysis, and so must not assume any part of the latter. The line of demarcation between the two must be sharp" (p. 107). This constituted, in Joos' terms, a "codification" of the

principle of separation of levels espoused by Bloch in 1941 (reprinted in Joos, 93-96).

Hockett's 1942 article also refined Bloch's one-year-old definition of "allophones," set the stage for the invention of suprasegmental phonemes, and defined "morphophonemics" as "the branch of grammar which deals with the phonemic shape of morphemes, words, and constructions, without regard to their meaning" (Joos, p. 107). A year later, Harris' article "Morpheme Alternants in Linguistic Analysis" (1942; reprinted in Joos, 109-115) constituted a decision to apply the methods of phonemic analysis to the morphological level. The term "allomorph" apparently eluded him, being coined later by Hockett, but the principle was clear: what's good for the phoneme is good for the morpheme ... and meaning was no good for either.

Having barely scratched the surface of the history of American linguistic achievement, I am not at all sure that I have been able to demonstrate convincingly the central thesis of this paper: that a history of linguistic discoveries, inventions, definitions, and decisions will be more revealing, if perhaps less exciting, than a taxonomy according to "revolutions." But I very much hope to see a history of some sort produced--and the sooner the better, for two reasons. First, our field enjoys, for the moment, the privilege of having among its current practitioners a number of those scholars who were actively involved in the formative years--and we will not have this first-hand source indefinitely long. Secondly, if the definitive history of American linguistics appears soon enough, I can abandon what I fear is a nearly hopeless task; in truth, I would much rather read such a history than write it.

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THE PLACE OF TAGMEMICS IN LINGUISTIC SCIENCE

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D. The concerns of this paper are twofold: first, to discuss the ways in which linguistics may be considered a science, and second, to locate tagmemics as linguistic science within the main body of linguistic theorizing. Recent literature on the question of whether linguistics can be considered a science has tended to frame the issue in the vocabulary of 'paradigm replacement' enunciated in Thomas Kuhn's The structure of scientific revolutions. The literature has tended either to compare the history of linguistics to the history of science in terms of revolution and continuity, or to examine whether linguistics as a discipline is dominated by a commonly-held paradigm such as is required by Kuhn's definition of a science.

In his book, Kuhn describes the history of science as the oscillation between periods of 'revolution' and periods of 'normal science' which follow the revolutions. Scientific revolutions are defined as 'extraordinary episodes in which ...shifts of professional commitments occur' (6). These shifts of commitment revolve around shifts of paradigms, the concrete puzzle-solutions which act as models or examples for the solution of other scientific problems. The paradigm at any given point defines in an open-ended way those areas of scientific inquiry which are considered problematic and those which are considered to have solutions. The paradigm thus defines the problems to be solved; the period of normal science is the time of puzzle solving in which great progress may be made because of the commitment of the scientific community to a common paradigm (which permits great specialization.)

Each paradigm defines the field of observation in a slightly different way; Kuhn thus speaks of the change from one paradigm to another in terms of gestalt-like conversion. This change involves a redefinition of the possible problems and solutions of the scientific enterprise. That is, a change in paradigms entails a change in the criteria of significance and legitimacy of problems and solutions.

Comparisons between linguistics and the 'hard sciences' of Kuhn's description have focussed on different aspects of Kuhn's analysis. Greene (1974) writes about the analogous development of linguistics and science, in that both have gone through the same periods of pre-paradigm and paradigm stages--though at different times. "The main difference seems to be that, whereas physics and natural history achieved a stable conceptual framework in the seventeenth century, linguistics did not come to a focus on historically oriented comparative philology until the early nineteenth century' (493). Thus the period of comparative philology in the nineteenth century marks the first paradigm stage achieved by linguistics. In addition to locating a first paradigm in linguistics, Greene notes that the discipline has been marked by revolutionary

development, 'though not of a kind that can be fitted into Kuhn's model of anomaly, crisis, and paradigm substitution' (499).

In another discussion of the applicability of Kuhn's analysis to the history of linguistics, Percival (1976) reiterates Kuhn's position that revolutions are common to all disciplines, but a commonly-held paradigm is characteristic only of science. Instead of choosing nineteenth-century philology as a test paradigm, Percival chooses the emergence of transformational grammar. While its emergence somewhat fits the revolutionary pattern described by Kuhn, Percival wonders whether TG can be considered a paradigm: 'What causes trouble...is the sociological dimension of paradigms. Generative grammar does not command uniform assent among linguists all over the world; it is not a conceptual framework shared by all members of the profession' (289). Percival lists a number of other linguistic theories which still command attention from linguists. After discussing the earlier history of linguistics as a succession of paradigms, Percival concludes that Kuhn's analysis is not applicable to linguistics.

The same conclusion is reached in Hymes 1974b, in which Hymes argues that in linguistics no one paradigm community has ever been equal to the whole of the discipline. Rather than 'paradigms' in linguistics, Hymes prefers to speak of 'cynosures,' or centers of attention, co-existing at one time. He seems to feel that this situation is preferable (and in fact, more advanced) than the notion of a single paradigm community: 'Critical reflection on the concept of "paradigm" may lead us to transcend the "paradigmatic" phase, and enter into a phase that is pluralistic in ideal and practice--even, to borrow an analogy from Chomsky's political interests, anarchistic' (19).

Perhaps in reaction to the explorations into revolutions and paradigms in linguistics, Gleason titled his paper at the Second LACUS Forum "Continuity in Linguistics," in which he held forth that 'in spite of all the talk of revolution, linguistics has had a remarkable continuity' (3). Gleason's reaction is typical of the reaction which has met Kuhn's theory of paradigm-replacement in the philosophic community. Instead of wholeheartedly accepting Kuhn's position, many philosophers of science have attempted to incorporate it with features of the continuity model in describing the history of science. Lorenz Kruger, for example, writes (333):

I am convinced that the accumulation model of scientific progress is much too simple and untenable. But it has one advantage which the revolutionary model does not. Growth of knowledge is a natural consequence of it, whereas in the revolution model, growth--though one of its central themes--presents a problem that has not yet been explored far enough.

Many of the investigations into the scientific status of linguistics focus on features that might be subsumed under the heading 'sociology of knowledge,' for they deal with the movement and acceptance of new ideas through a given community. But there is another way in which this investigation might be carried out, and that is through a comparison of the formal similarities between linguistic and scientific theorizing. That is the direction in which I will guide the remainder of this paper, but it should not be assumed that the two directions are mutually exclusive: there

is often a definite connection between one's view of the development of science and one's conception of the activity of 'normal science.' After examining the structure of several kinds of scientific theories, I will discuss how they can be compared with certain theories in linguistics.

1.

1.1 In what sense is a theory like the data or part of reality which it seeks to explain? How closely must the structure of a theory correspond to the structure of that which it seeks to explain in order for the theory to be considered a valid explanation? In logical theories, this question of correspondence is irrelevant, for one deals with terminology and laws which are defined to be true a priori and tautologically. But for empirical theories, whose starting point is based in common experience, the issue of correspondence is crucial. Indeed, it is their link to experience which separates empirical theories from purely logical ones. The development of scientific thought from an empirical base is characterized by Ernest Nagel (1961:79) in the following way:

Scientific thought takes its ultimate point of departure from problems suggested by observing things and events encountered in common experience; it aims to understand these observable things by discovering some systematic order in them; and its final test for the laws that serve as instruments of explanation and prediction is their concordance with such observations.

Scientific systems, for Nagel, are a hierarchy built on observation sentences. At the top of the hierarchy are the theoretical principles, or, as Nagel identifies it, the 'abstract calculus' which is the logical skeleton of the explanation. In between the abstract calculus and the observation sentences are the 'model,' or interpretation of the calculus, and the bridge principles, the set of rules that assign empirical content to the calculus by relating it to the concrete material of observation and experiment. The particular kind of empirical approach exemplified by Nagel's position is known in philosophy of science as the 'standard construal' or 'standard analysis' of empirical theories. It has been characterized as combining a 'broadly empiricist outlook and a precise logico-analytical approach to problems in the philosophy of science' (Hempel 1973:367). The logico-analytical orientation of the standard construal approach is demonstrated in R.B. Braithwaite's Scientific explanation (1968:21):

What we are concerned with are the straight logical problems of the internal structure of scientific systems and the roles played in such systems by the formal truths of logic and mathematics....

In one way, the standard construal of empirical theories is simply a refined version of the classic empirical method of scientific discovery: the procedure of observation, formulation of a hypothesis, testing the hypothesis, and establishing it as a scientific law. According to Braithwaite (2, 8), the fundamental aim of science is the establishment of such laws in the form of generalizations asserting a universal connection between properties. But having come through the era of positivism in the early twentieth century, the standard construal approach does not have a conception of scientific laws as totally absolute, for it realizes that those

laws are not laws in an a priori sense; they are, rather, observed tendencies toward uniform behavior on the part of the phenomena in question. That is why they are generalizations. The classic empirical method--the so-called 'scientific method'--is based on a form of induction which is no longer held to be valid since Hume's critique of the notion of cause and effect as logical necessity. The standard construal approach recognizes that no amount of empirical evidence may be said to prove a hypothesis to be true (in a logical sense.) All that can be established is the validity of the hypothesis as a generalization which has not yet been proven false.

The logical component of a standard construal theory consists of the abstract calculus and the 'model' of that calculus which relates the calculus to the observation statements by means of the interpretive bridge principles. The use of the term model derives from mathematical usage, in which a model is a simplification of theoretical elements, rather than from social science usage, in which a model is an abstraction of empirical data. Proponents of this mathematical use of model argue for it on the basis of simplicity and predicability. The use of the model as a simplified version of the abstract calculus is supposed to make the theory easier to handle. In addition, properly-formed models are valuable for predicting the outcome or shape of as yet undiscovered phenomena. But the model does not refer to the external phenomena. Nagel himself recognizes that 'although a theory is presented in terms of a model, it by no means follows that the theory is automatically linked to the experimental concepts and observation procedures' (97). A model refers directly only to the abstract calculus of which it is a simplification. Indeed, some proponents of the standard construal approach seem to regard it as a virtue (by way of avoiding induction) that the postulates of a theoretical calculus implicitly define its primitive terms in such a way as to ensure the truth of the postulates--regardless of any empirical evidence. The problem then, as Carl Hempel notes, is that 'if the truth of the theoretical postulates [is] enforced by terminological fiat, then the entire theory [is] made true a priori' (370). This may be adequate for a mathematical theory, in which subject matter and terminology are practically equivalent, but it is not adequate for an empirical theory which must in some way correlate its theoretical apparatus with its subject matter in the world of experience.

Thus, one problem of the standard construal approach is in the connection of the logical component of a theory to the observation statements which the logical component is supposed to explain. In order to avoid inducting the theoretical statements from the observation statements, proponents of the standard construal approach have sought to claim that everything in a theory is deducible from the abstract calculus. But in so doing, they have assured the logical truth of the abstract calculus irrespective of empirical evidence. A further problem of the standard construal approach is its notion of a stable observation language. As we have seen, the observation statements are the base on which the theoretical statements rest. Kuhn rejects the notion of a stable observation language because he believes that a paradigm change entails a perceptual change (126):

Science does not deal in all possible laboratory manipulations. Instead it selects those relevant to

the juxtaposition of a paradigm with the immediate experience that the paradigm has partially determined. As a result, scientists with different paradigms engage in different concrete laboratory manipulations.

The paradigm-determined character of observation is the reason why Kuhn describes the shift between paradigms as a gestalt switch involving a remapping of one's perceptual field. Thus it is difficult, if not impossible, for possessors of different paradigms to argue with each other on purely logical grounds. 'Each group uses its own paradigm to argue in that paradigm's defense' (94).

1.2 An empirical approach to scientific theorizing which avoids the problems of the standard construal approach is Mary Hesse's 1965 conception of a model as a 'metaphor.' Instead of linking the theoretical statements of a theory to its observation statements by means of deduction and the assumption of a stable observation language, Hesse proposes the conception of a model as a metaphor. The problems of deducibility listed above are avoided in this conception because there are no correspondence rules: the metaphor itself is the source of interaction between the theoretical statements and the empirical observations.

In Hesse's view, a metaphor is a conjunction of a primary and secondary system. The primary system is the domain of the explicandum, i.e. the observations to be explained. The secondary system is described in the terminology of a familiar, accepted theory or of already understood observations. The metaphoric process consists of explaining the primary system by transferring to it a word or words used in connection with the secondary system. Because of their participation in the metaphor, both the primary system (the domain of the explicandum) and the secondary system (the already-understood observation or theory) are changed. Thus, the model-as-metaphor view does not presuppose a stable observation language; any observation language will itself be metaphoric, i.e. based on an earlier secondary system.

While criticizing the standard construal approach for its inability to relate the theoretical statements to the observation statements of a theory, Hesse's model-as-metaphor conception shares other features of the standard construal approach, e.g. the function of the model for discovery and prediction. For models as metaphors, the 'process of discovery proceeds by translating sentences which are known to be true or false of the one subject into sentences of the other subject whose truth or falsity is then conjectured and appropriately confirmed or denied' (Eberle 1970:232).

I noted earlier that the use of model in the standard construal approach referred primarily to the abstract calculus of a theory, rather than to the observation statements. Hesse's usage of model as a metaphor comes closer to being a model of the world, for its purpose is to connect some phenomenon (stated in terms of observation language) with some already accepted theory or other observation statements (which are about the world of experience). Further, Hesse's model is firmly grounded in the empirical world not only in its inception in the observation statements, but also in checking and testing: (1973:379):

(A)11 models of the structure of science describe what are essentially mechanisms of learning. Almost without exception, these models presuppose that the subject

matter of learning is the empirical world, and that the world interacts with the learning device.... Again, almost without exception, models of science presuppose that the learning process returns to the empirical world, which provides checks and reinforcements, and is the source of prediction and control.

1.3 A more radical critique of scientific theorizing of the standard construal type, though one which is compatible with Hesse's model-as-metaphor approach, is offered by Michael Polanyi in The tacit dimension. There, Polanyi begins with the rather simple observation that 'we can know more than we can tell' (4). From this observation he distills a type of knowing different from explicit knowing, i.e. what we can tell. This other type of knowing Polanyi calls 'tacit knowing.' We know something tacitly by relying on our awareness of it to attend to something else. Polanyi shows how, by relying on a theory to understand nature, we interiorize it and thus know it tacitly. This process of interiorization underlies all observation. There is thus no difference in this respect between the humanities and the natural sciences. Polanyi recognizes that this pits him against the declared aim of modern science to establish a 'strictly detached, objective knowledge' (20):

But suppose tacit thought forms an indispensable part of all knowledge. Then the ideal of eliminating all personal elements of knowledge would, in effect, aim at the destruction of all knowledge. The ideal of exact science would turn out to be fundamentally misleading and possibly a source of devastating fallacies.

Polanyi shows how this ideal of exact science is impossible in mathematics as well as in other, more empirical sciences. For even in mathematics a theory is constructed by relying on prior tacit knowing, and it functions as a theory 'only within an act of tacit knowing which consists of our attending from it to the previously-established experience on which it is based' (21).

In line with his conception of a science as a process of theory interiorization, Polanyi's conception of the process of scientific inquiry involves a kind of tacit knowing on the part of the scientist. Guided by his tacit knowledge of the hidden reality behind a problem, the scientist pursues the solution to that problem with a 'valid anticipation of the yet indeterminate implications of the discovery arrived at in the end' (24). Tacit knowledge accounts for the scientist's hunches of being on the right track. In a sense, Hesse's model-as-metaphor approach represents a kind of tacit knowing for in it, the analyst is attending from one theory or phenomenon which is already known to explain a new phenomenon.

2.

2.1 Having examined the dichotomy between the logic-based standard construal approach to scientific theorizing and the metaphor-based model of Hesse (supplemented by Polanyi's notion of tacit knowledge), we now turn to linguistic theorizing to see if any analogy may be found. Interestingly, a parallel tension is posed in Hockett 1968 between logical and empirical approaches to linguistics, in which the difference between Hockett's own empirically-based view and Chomsky's logically-based transformational view is

contrasted in terms of the difference between the physical sciences and pure mathematics. The focus of this difference is the use of the terms 'ill-defined' and 'well-defined.'

A well-defined system, according to Hockett, is any system--physical, conceptual, or mathematical--that can be completely and exactly characterized by determinate functions (45). A system is considered well-defined if it can be specified to be infinite or if its least upper bound is specifiable. Hockett gives the example of the set of scores in a baseball game as a well-defined system: the set of all possible scores can be predicted by a function and there is nothing in the rules to prevent the scores from going infinitely high. The set of scores of a football game, on the other hand, is ill-defined, since the game is limited by time constraints in its rules and since, within those constraints, the set of possible scores is neither infinite nor is a least upper bound specifiable. Hockett asserts that no physical system is well-defined (52); therefore language, as a physical system, is ill-defined. The Chomskian view, on the other hand, is claimed to assert the well-defined nature of language (40):

The grammar of a language is a finite system that characterizes an infinite set of (well-formed) sentences. More specifically, the grammar of a language is a well-defined system by definition not more powerful than a universal Turing machine (and, in fact, surely a great deal weaker.)

(This is Hockett's own rendering of a thesis which he takes to underly Chomsky's position.) In the Chomskian view, a grammar of a language is a model of that language--in the sense of being a concrete interpretation of the abstract principles of that language. This is clearly expressed in Chomsky 1962 (533):

What we seek, then, is a formalized grammar that specifies the correct structural description with a fairly small number of general principles of sentence formation and that is embedded within a theory of linguistic structure that provides a justification for the choice of this grammar over alternatives. Such a grammar could be properly called an explanatory model, a theory of the linguistic intuition of the native speaker.

The raw material of linguistics of linguistics for Chomskian theory is not the observed language data of a speaker's performance. It is the speaker's competence--the 'linguistic intuition of the native speaker'--expressed in base rules which might be considered the equivalent of the abstract calculus of a standard construal theory.

In Hockett's view, the terminology of logic and pure mathematics is equivalent to the subject matter of those disciplines. The terminology is defined to be true a priori. In the physical sciences, on the other hand, the terminology used is not equivalent to its subject matter, and in fact is being constantly revised in terms of that subject matter. This is characteristic of an empirical approach and this is where Hockett places linguistics (57):

With no hesitation whatsoever, I answer that linguistics is an empirical science; that 'conclusions' reached about language on any other basis are worthy of scientific consideration only as hypotheses; and that even the very special communicative-symbolic behavior of logicians

and mathematicians can be observed and described from the empirical point of view in science (without in the slightest challenging the worthiness of their activity.)

In Hockett's opinion, Chomsky's main contribution to linguistics lies in the fact that he has made it possible to differentiate these alternative views of linguistics as a mathematical or empirical science. But Chomsky has done so by choosing the wrong option to defend (however elegantly). A theory, according to Hockett, is always an approximation, because it of necessity leaves something out of its account. While Chomsky's algebraic grammar may be a useful approximation, it errs by leaving out of account those things which are 'just the most important properties of human language' (62), its ill-definedness, which is the source of its openness.

The same sort of criticism against transformational theory qua mathematics is made in Haas 1966. For linguists in the Firthian school, the object of linguistics is to account for utterances in terms of recurrent elements in recurrent relations. Linguistics is therefore an empirical science. Hence, as Haas notes (119), a 'theory like "Generative Grammar," which refers to the logical properties of various given grammars rather than directly to the empirical properties of human speech, is not a linguistic theory about speech, any more than a logical theory about the statements of various kinds of physics could be regarded as a physical theory about a the material world.' 'TG is metalinguistically useful to keep our tools in order, but its statements are about grammars, never directly about language' (120).

2.2 Thusfar I have considered two alternative conceptions of linguistic theorizing: one, a mathematical conception; the other, an empirical one. In the preceding discussion I considered various criticisms of the mathematical approach to linguistic theorizing, the substance of which is similar to the criticisms of the standard construal approach offered earlier in the paper. Both logically-based approaches make use of models which are simplifications of the theoretical apparatus of the theory; the relation of the theoretical component to the empirical component in both approaches is quite problematic. Hockett's conception of linguistics as an empirical science, on the other hand, avoids the shortcomings of these approaches, but is silent on other problematic issues--on the status of an 'objective' observation language and on how a theory 'explains' the data on which it rests. In the work of Kenneth Pike, however, one finds a clear identification with the empirical method along with an awareness of its philosophically troublesome points. For Pike integrates an empirical approach with an emphasis on the personal component of knowledge (à la Polanyi) and an understanding of a theory as a kind of metaphor (à la Hesse). I will not attempt to summarize the whole of Pike's work in linguistics here, or even all of his particular theory of linguistics (tagmemics). Rather, I will discuss those aspects of tagmemic theory which bear on the issue of linguistics as science, as considered in this paper.

2.3 Pike likens a theory to a window or perspective on some body of data. The position of the window, size of the opening, and grid all affect what one sees through it. Different theoreticians who build their windows at different places will see different things. Hence, the perspective of the observer is of great importance, and this is the first point discussed in Pike's most recent attempt to

codify the principles of tagmemics (Pike 1976:91):

The observer standpoint is relevant to finding data; no thing-in-itself (i.e. apart from an observer) is discussed by the theory.

At first this appears rather obvious, harking back to the early Greek philosophers' question of whether a tree falling in the forest makes any noise if there is no one to hear it. What is remarkable in this context is that it should be ignored in the work of other linguists. Pike's answer to the question frees him from committing the epistemological fallacy of forgetting that his own theory must be accounted for within itself. Further, by leading to a distinction between *emic* (inside) and *etic* (outside) views of the perceived units of a system, Pike's position allows him to accept different theoretical explanations from the same body of data due to differing *etic* purposes or perspectives.

Pike's theory thus incorporates the perspective of an observer (in Polanyi's terms, 'the personal element of knowledge') from the start. Yet his theory is also an empirical one. Pike is insistent on the physical basis of his theory (though that is not its only basis); every utterance has a simultaneous manifestation in three modes: in a hierarchy of purposive or meaningful units (the referential hierarchy), in a hierarchy of grammatical arrangement, and in a physical (phonological) hierarchy. Because language has a physical base, '(i)ndeterminacy must be accepted as part of the data of actual behavioral systems--not as a mere artifact of the analytical approach via a set of conceptual tools' (1976:91). Like the scientific method, Pike's approach in linguistics is a 'hypothesis and test' approach.

Like Hockett, Pike invokes the mathematics/physical science distinction to explain the differences between Chomsky's approach to linguistics and his own. In Pike and Pike 1976b these differences are explained in some detail (30-31):

Tagmemics as science (not as mathematics and not as logic) is a theory-of-experience-as-part-of-the-environment; and, conversely, it is a theory-of-environments-as-part-of-the-experiencer.... (A)bstract rules can neither be the entrance point nor the sole end product of scientific research; they fail to have the necessary observer-observed correlation. Tagmemics, on the contrary, emphasizes the philosophic relevance to science of the specific and concrete as well as the general and abstract.

In this statement, the Pikes are reacting to an earlier statement of Chomsky (1962) about the existence of real elements behind the notation of transformational grammar (quoted in Pike and Pike 1976b: 32):

(W)e no longer have any reason to consider the symbols 'NP,' 'sentence,' a 'VP,' etc. that appear in the rules to be names of certain classes of concrete elements. They are simply elements in a system of representation which has been constructed so as to enable us to characterize effectively the set of English sentences in a linguistically meaningful way.

In opposition to this view, the Pikes emphasize the 'granular nature of the universe.' In the Pikes' understanding, this nature entails that the representation of the universe (such as occurs in

linguistic theorizing) be also granular. Thus, a 'notation which suggests that a constituent tree structure has nodes as dimensionless points [as does Chomsky's position] is false to any observable universe; the nodes must have dimensions.' The 'tagmemic four-celled notation gives dimensional reality to the nodes of a tree, or to the constituents of a formation' (31).

For Pike then, as for Hockett, linguistics is an empirical science. But Pike is a bit more explicit in his understanding of the connection between theory and data, which is much like the model-as-metaphor approach. Pike is fond of quoting the British philosopher Angus Sinclair to the effect that whenever one goes beyond theoretical proofs or axioms, one has to go to metaphor. Thus a theory is at base a metaphoric way of representation. The place in Pike's work where metaphor, empirical science, and personal knowledge all coalesce is in his conception of language as particle, wave, and field. In Pike 1959, Pike borrowed the terminology of physics to describe language from three different--but mutually necessary--observer perspectives: the particle view, best exemplified in the conception of a phoneme as a contrastive unit; the wave view, which handles the smearing of borders between sounds and syllables in a single stream of speech (--'the totality of any one sound is not necessarily found in any one segmentable section of the sequence' (46-47)); and the field view, in which a word is seen 'not as part of one sequence alone, but as part of a whole class of words which is not being uttered at one particular time but is part of the total potential behavioral field' (50).

The importance of this metaphor for Pike's theoretical activities can not be overestimated. The particle, wave, and field perspectives (or, as they are frequently labelled, 'static,' 'dynamic,' and 'relational' perspectives) are extremely powerful in Pike's thought. Not only do these three perspectives form three of the twelve principles underlying tagmemics (Pike and Pike 1976a:1):

I. UNIT

- A. Contrastive-identificational features
- B. Variation and physical manifestation
- C. Distribution
 - 1. in class
 - 2. in sequence
 - 3. in system

II. HIERARCHY

- A. Referential
- B. Phonological
- C. Grammatical

III. CONTEXT

- A. Form-meaning composite
- B. Change via shared element
- C. Universe of discourse

IV. PERSPECTIVE

- A. Static (or particle)
- B. Dynamic (or wave)
- C. Relational (or field)

but they also dominate one axis of the arrangement of these twelve principles in matrix form. (This arrangement is my own, based on Pike 1976, Pike and Pike 1976a, Young et al. 1970, and personal communication with Pike.)

IV. PERSPECTIVE	I. UNIT	II. HIERARCHY	III. CONTEXT
A. STATIC	A. Contrast 1. in class	C. Grammatical	A. Form-meaning composite
B. DYNAMIC	B. Variation 2. in sequence	B. Phonological	B. Change via shared element
C. RELATIONAL	C. Distribution 3. in system	A. Referential	C. Universe of discourse

Writing about the particle, wave, and field terminology, Pike (1976: 99-100) describes the historical course of the development of tagmemics using this vocabulary:

Once adopted, this terminology proved so effective in highlighting those language characteristics that I had been struggling with for a decade, that I continued to use it extensively. In addition to helping label parts of the data, it implied that the dynamic-static-relational perspective should be maintained as parts of the theory, even though they were in some kind of uneasy balance, since it was not simple to join them logically in a single axiomatic approach.

In the continuation of the passage quoted above, Pike writes that he regarded the decision to retain these perspectives a choice 'to maintain the data, reporting the facts of the possibility of multiple perspectives, rather than rejecting any two of them from the explicit theoretical framework in order to gain greater internal coherence' (100). An additional reason to retain the three perspectives might also be the powerful way they help to organize the principles of tagmemics into a two-dimensional matrix like the one above. The matrix display seems to have great appeal to Pike, for he continuously uses it to organize material. The evident appeal of this display type recalls the question I posed at the beginning of section 1.1: In what sense is a theory or model of a theory like its data? In a model, it is important to know which features are being compared with the data and which features are irrelevant. Pike's fondness for arranging his material in matrix displays seems to be based on some conviction that it really represents the arrangement of language in the world. Indeed, the tagmeme itself (from which the theory derives its name) is a four-celled representation of grammatical constituents in a two-by-two matrix:

ARRANGEMENT	FUNCTION	FILLER
	Slot	Class
SITUATION	Role	Category (Cohesion)

The use of the matrix form in tagmemic theory is derived by analogy from the phonetic chart (a matrix arrangement of manners of articulation graphed against places of articulation), and it is interesting to examine the development of tagmemics as a theory based on analogy with the principles of phonemics. Pike 1976 describes how in 1944 Pike began to wonder whether it would be possible 'to find a useful bit of grammar which could be treated in a fashion

analogous to the phoneme' (95). In a way which exemplifies the use of a model for discovery procedures, Pike explains how he called 'this not-yet-discovered unit a grammeme' (95). After beginning to discover this unit as an element filling a slot in a grammatical construction, Pike translated other conceptions from the phoneme to the grammeme, i.e. contrastive features with other units, range of variability, and distribution. After discovering that these concepts could be successfully applied to the grammeme, Pike jumped to a generalized definition of any linguistic unit as an element with contrast, variation, and significant distribution constraints. 'Similarly, the insistence that a phonetic chart become a relevant part of the theory was later brought to bear on grammar. By 1960 [Pike] was looking for a composite matrix of elements of grammar...' (99). Here we have a first-hand description of a method of scientific discovery: The scientist proceeds by analogic extension and then checks the truth of that extension. This is essentially the description of scientific discovery using the metaphor conception of a model described earlier.

Thus in tagmemics we find an example of a linguistic theory constructed by analogy with empirical science, but one which includes a sophisticated awareness of the personal stance of the observer and the metaphoric nature of models and theories. In so doing, tagmemics avoids the shortcomings of both the standard construal-type approach and traditional empirical theories with their absolutistic assumptions about the truth of a hypothesis and the stability of observation language.

3. Throughout this paper, there has been a tacit identification of the sciences which are considered appropriate paradigms for evaluating linguistics as a science. I am referring to the positions of importance occupied by physics and mathematics. The centrality of these disciplines in the history of science has been noted by Harre (1967:295):

Despite great differences of opinion, a recognizable unity appears in the central position given to physics (...generally regarded as central in content or in method) and in a preference for argument in a mathematical style.

Why should this be? In a sense, this question returns us to the beginning of the paper in which I discussed the relationship of similarity between a theory and what it attempts to explain. Why should a phenomenon as vital as language be described by analogy with an inert science like physics? Why not choose biology as an analogue? Harre cites examples of biological approaches in the philosophies of Bergson and Whitehead. Such approaches are non-atomistic, holistic, and concerned with relations between parts--characteristics typical of a structural systemic approach. Perhaps what is needed is a structural theory of linguistic theorizing?

The same kinds of questions are raised by Alton Becker, who emphasizes the need for conceptual schemes to reflect the level of complexity of what they are explaining. Becker lists eight kinds of structures, arranged in order of increasing complexity. (This reference is taken from lecture notes):

1. Static
2. Clockwork
3. Cybernetic
4. Biological Cell
5. Plant
6. Animal
7. Man
8. Culture

One of the problems with much theoretical activity, complains Becker, is that it is reductionistic. It tries to explain many of the higher structures in models or theories derived from lower ones. Most empirical theories, for example, are stated in static--or at least, mechanistic--terms. Pike's theory differs from many other empirical theories in its salutary emphasis on the different perspectives and in Pike's attempt to re-combine language with other forms of purposive behavior (perhaps at the level of culture?). It is no accident that Pike's magnum opus is entitled Language in relation to a unified theory of the structure of human behavior. Further, Pike's theory differs from other empirical theories in its conception of model as a metaphor. This conception of model as a dynamic process linking two systems avoids the pitfalls of the standard construal approach and substitutes a more organic conception of the scientific enterprise.

Of course, in defending the model-as-metaphor approach, I am not denying the validity of the model-as-simplification approach derived from logic--within certain limits. I do intend to suggest, however, that a purely logical approach, whether in mathematics or in the standard construal approach, is inadequate for studying the history of a science, or even for describing the activity of scientific inquiry, because it neglects the personal components of knowledge--the tacit knowing and purposes of the scientific community that is a part of any inquiry. Further, a purely logical approach to scientific theorizing is reductionistic, in that it attempts to reduce all relations--whether of abstract or concrete elements--to logical ones.

The model-as-metaphor approach, on the other hand, is more explicit in recognizing the creative activity of the scientist as he extends an explanation from one system to another. This approach also allows more possibility for correlating the level of the model with the level of complexity of the structure being described. Such emphases, it seems to me, are to be valued after the reductionism of the positivistic era of science.

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LANGUAGE AS A FIRST-LEVEL ABSTRACTION

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In the hierarchical model of nonsegmental phonology (see Griffen 1976, in press), a phonological system is abstracted from the recent evidence of dynamic phonetics (chiefly Mermelstein 1973; see also Perkell 1969, Ohman 1967, Gay 1977). As the evidence from phonetics shows, the continuum of speech cannot be divided into a series of discrete segments, at least not in accordance with any observable criteria (compare Fant 1962). On the other hand, with the phonetic features organized into a system of coarticulatory constraint, with certain features acting as constraints or obstructions upon other features with which they are simultaneously articulated, a workable model of phonetic analysis and synthesis has been constructed. This evidence from phonetics, then, eliminates the speech segment as a unit of sequential organization and replaces it with the syllable (compare Mermelstein 1975).

In the last two Fora of the Linguistic Association of Canada and the United States, I demonstrated first that, when the segment is removed from the phonology as it has been from the phonetics, all relationships of phonological, morphophonological, and archiphonological pertinence can be shown to involve not different types of segmental entities, but simply different functions of the very same phonological relationships. Thus, phonology within a nonsegmental model is marked by functional, not by structural relationships (Griffen 1977). Further, I demonstrated that, as the phoneme is eliminated in the phonological structure as is the phone in the phonetic structure, there is no such concept within the nonsegmental system as allophony, for allophones obtain in segmental models only where there is a discrepancy in the number of phonemes relative to the number of phones (compare Lockwood 1972:27). Thus, where features and opposition relationships as such are entered into the structure, without an organization into bundles, the very concept of allophony has no place (Griffen 1978).

It might be helpful at this point to review just one case of alleged allophony in order to appreciate the implications of the elimination of this concept from phonetics and phonology. In the Welsh word ci [ci:] 'dog' and its plural form cwn [ku:n], the initial obstruction of the syllable is marked in the former by the palatal tongue-body position and the lack of lip protrusion and in the latter by the velar tongue-body position and the presence of lip protrusion. Insofar as this difference can be predicted by the syllabic vowel, segmental models have traditionally treated [c] and [k] (or, technically [kʷ]) as allophones of the phoneme /k/. However, as demonstrated by Mermelstein (1973) and by Perkell (1969:65), the tongue-

body position and lip protrusion are articulatory characteristics not of the consonants, but of the vowels constrained by and coarticulated with the consonantal (obstructional) features. Thus, the fact that one consonant appears to be palatal and unprotruded while the other appears to be velar and protruded is an illusion of segmentation by which vocalic features are arbitrarily assigned to bundles along with the obstructional features (compare Liberman 1970).

In the nonsegmental model, on the other hand, consonantal features are assigned only to consonants and vocalic features are assigned only to vowels, such that the former constrain the latter within the organizational unit of the syllable. When this is done, the pertinent marks of obstruction between *ci* [ci:] and *cŵn* [ku:n] do not differ in any respect. As there is no difference in the obstructional features in the phonetic structure, there is no discrepancy between the realization of the features in the phonetics and that in the phonology. In like manner, it can be shown that all alleged cases of allophony are a result of cross-sectional segmentation and that a nonsegmental model does not in fact maintain any difference in structure between categories and relationships in the phonetic structure and categories and relationships in the phonological structure--the difference is simply one of functional pertinence.

With all structural discrepancies between the phonetic structure and the phonological structure eliminated, the existence of a separate phonological structure should be called into question. Indeed, if the structure of phonology is abstracted without structural change (without creating discrepancies) from the structure of phonetics and if the only difference between the categories and relationships of phonology and those of phonetics lies in functional pertinence, then the phonology should be subsumed as a structural subset of the phonetics. As the attributes by which the categories and relationships of the phonology are identified as members of the phonological subset of phonetics are functional, then the phonology in a nonsegmental model is in practice as well as in theory functional dynamic phonetics (compare Martinet 1949, Griffen in press).

To illustrate this concept, I should like to make use of the obstruction prosody system of Welsh, in which there are four degrees of aspiration within the phonetic structure. From the first (lowest) degree to the fourth (highest) degree, this opposition of aspiration can be seen in the nonsense syllables *dda* [da], *da* [da], *ta* [ta], and *tha* [θa], for example. The phonetic difference between *da* [da] and *ta* [ta], then, is that the latter consists of one degree more aspiration constraining the obstruction than the former. To simplify matters, I shall restrict my discussion to these two degrees and refer to the former as unaspirated and to the latter as aspirated.

In the Welsh sentences *A oes tŵr yma?* 'Is there a tower here?' and *A oes dŵr yma?* 'Is there water here?', the difference between the aspirated member of the prosodic opposition in *tŵr* [tu:r] 'tower' and the unaspirated member in *dŵr* [du:r] 'water' is sufficient to demonstrate that the two words have different referents (which is to say that they mean different things). Thus, the two categories of aspiration and the relationship between them are not only elements of the phonetic structure, but they also belong to the phonological

subset, for the relationship of opposition serves a function in meaning. This particular function I should like to call *semophonological*. (The term *phonological* refers to the entire subset of all functions, and the traditional use of this term to designate this particular function as well would perpetuate a source of ambiguity we could well do without.)

In the Welsh sentences *Deall tad* 'A father understands' and *Deall dad* 'He/she understands a father', the situation is somewhat different. While the semantic content of *tad* [tad] 'father' and its soft mutation form *dad* [dad] is the same, the difference between the aspirated member in the one and the unaspirated member in the other is sufficient to demonstrate that the one is the grammatical subject and the other is the grammatical object. Thus, there is a difference in meaning, but this difference is realized through the opposition's serving a function in the grammar. Such a situation is termed *morphophonological*. (This is a traditional term and although the term *semomorphophonological* would perhaps be more precise, no ambiguity is introduced through the maintenance of the more familiar term.)

A relationship serving a function in the phonological subset pertinent of the grammar but not to the semantics is the *archiphonological* relationship. For example, in the Welsh words *tlawd* [tlaud] 'poor' and its superlative form *tlotaf* [tlotav], the difference between the aspirated member in the latter and the unaspirated member in the former simply demonstrates that the aspirated member cannot occur in word-final position. By definition, this neutralization of contrast serves no semantic function, but it does serve the grammatical (morphological) function of indicating the final boundary of a word.

Within the nonsegmental model, there is no structural difference between these various types of phonological relationships and the phonetic relationship of aspiration. This is to say that the one structural relationship between two phonetic categories, two degrees of aspiration, is used to indicate functional pertinence to the semantics and/or to the grammar. Approaching the situation from another direction, we can see that the various functional relationships (*semophonological*, *morphophonological*, and *archiphonological*) must maintain their attributes of semantic and/or grammatical pertinence in the phonetic structure. Moreover, as each of these functions (at least) is different from the others, each must maintain its own peculiar attribute of pertinence within the phonetic structure.

With the phonology as a subset of the phonetics and therefore on the same level of abstraction (the first level), and with phonological relationships identified simply by attribute, the implications of a nonsegmental phonology as a subset of the phonetic abstraction now affect the relationship between phonetics, on the one hand, and grammar and semantics, on the other. If, indeed, the attributes by which the various phonological relationships relate with the semantics and/or with the grammar are to be found on the phonetic level of abstraction, then those attributes in the semantics and in the grammar by which these latter relationships are identified as pertinent to the phonetics must also be found on the same level of abstraction.

For example, the function of the noun in the Welsh sentences Deall tad 'A father understands' and Deall dad 'He/she understands a father' differs grammatically in that in the one it is the subject and in the other it is the object. The opposition relationship between subject and object is thus realized through a morphological function pertinent directly to the phonetics, not indirectly through the phonology, for the phonology is just a subset of the phonetics, rather than a higher abstractional structure. As the attribute by which the morphophonological relationship maintains itself as a member of the phonological subset of the phonetics is also the attribute by which it demonstrates its pertinence to the grammar and as the attribute by which the morphological relationship (subject versus object) maintains itself as a member of the grammar is also the attribute by which it demonstrates its pertinence to the phonetics (aspiration versus nonaspiration), then the attributes of pertinence to the grammar and to the phonetics (and indeed to the semantics) must relate with one another on a single level of abstraction, for they are at some point identical.

In structural/functional theory, this hypothesis leads to a model of language in which phonetics, grammar, and semantics do not relate with each other through various abstractional or functional levels, but overlap on the same level through their functional attributes. As shown above, where phonetics overlaps with semantics and grammar is phonology. This is to say that phonology is functional phonetics--the attributes by which the categories and relationships qualify as a subset of phonetics are those which are likewise pertinent to the semantics and/or to the grammar.

Moreover, where grammar overlaps with phonetics and semantics is morphology. As in the case with the relationship between phonology and phonetics, morphology is, then, functional grammar, and the attributes by which the categories and relationships qualify as a subset of the grammar are those which are likewise pertinent to the semantics and/or to the phonetics. Viewed from this angle, the grammar itself is a system of order, such that where relationships of order (and implicitly, of distribution) overlap with phonetics alone is substantial but noncontrastive morphology, where they overlap with phonetics and semantics is substantial and contrastive morphology, and where they overlap with semantics alone is contrastive but non-substantial morphology (relations of syntax proper).

Similarly, where semantics overlaps with phonetics and grammar is semiotics, the system of signs. Furthermore, as above, that which is designated here as semiotics (and this makes no claim as to other linguistic models) is functional semantics, the attributes of which identify the categories and relationships of semiotics both as members of the subset of functional semantics and as pertinent to the grammar and/or to the phonetics. As the semantics is a system of meaning, where the relationships of meaning overlap with those of phonetics alone is substantial but unordered semiotics (including not only semophonology proper, but also such functions as the phonestheme), where they overlap with both the phonetics and the grammar is substantial and ordered semiotics, and where they overlap with the grammar alone is ordered but nonsubstantial semiotics (to include

such things as kinesics).

Behind this model is the premise that all of language is a first-level abstraction from the cognitive universe--that is, from the categories and relationships which obtain from the interaction of the brain with the environment. Moreover, the cognitive universe is viewed as being composed of three different elemental types pertinent to the abstraction of language: substance, order, and meaning. This model of language, then, consists of all possible combinations of the three elemental types in a complex network of relationships such that the structure of each participating system (phonetics, grammar, and semantics) is pertinent to language only where it is functional, where it enters into a relationship with one or both of the other systems.

Such a view of language is, I should maintain, consistent with human behavior. In learning the language, for example, a child may babble using sounds (substance) identical to the sounds of the adult's language, but this alone is accepted only as preparatory to language acquisition, not as evidence of the child's having acquired the language. Further, a child learning a language may very well recognize an order to the environment, but if that order is not put into substance and if it does not have meaning, we should certainly not recognize that a language has been acquired. Finally, the child who touches a stove will doubtless associate a personal meaning with the object, but if that meaning is given no substance, we have no observable evidence of language (and, indeed, if it has no order, we have no language in the brain).

On the other hand, once the child utters a sound (substance) in reference to a context (meaning) and with either internal (syntactic) or external (physical) juxtaposition of other sounds and/or referents (order), then we say that this child has acquired the language to some degree. For example, 'Stove hot' combines the elements in a way such that intellectual meaning can be transmitted. This, then, is language (or, at least, normal language), in accordance with the model suggested here.

In theory, then, this approach to language is compatible with structural/functional tradition. Language is a set of categories and relationships in the brain capable of being communicated and of reflecting intellectual thought. As such, it subsumes language within the general area of human behavior (compare Yngve 1975). It should further be noted that a system relating substance with the separate systems of order and meaning is more in keeping with the concept of structural/functional theory than is the traditional system relating substance with form, a rather purely structural concept (one in which meaning is derived only through order).

In practice, the model suggested here would have to be a relational model, capable of representing a complex network of relationships among three interlocking systems. (A relational network approach is also chosen on account of the behavioral aspects of the theory--compare Reich 1973.) It might be easiest, then, in describing how such a model would operate, to contrast the proposed model with that currently used in stratificational grammar, likewise a relational model (see Lockwood 1972, Makkai and Lockwood 1973).

While stratificational grammar can accommodate any number of

strata, the usual number is six--the hypersememic (cognitive), sememic, lexemic, morphemic, phonemic, and hypophonemic (phonetic). Each of these can be divided further, and of importance to us here is the fact that semiotics is included in the sememic stratum and morphophonology is included in the morphemic stratum. Each stratum maintains its own autonomous tactic pattern, and all strata are related through a realizational pattern, a tactic-like pattern connecting the hypersememic through the hypophonemic strata. The model is thus bidirectional, relating meaning to sound and vice versa.

In contrast to the stratificational model, this relational model maintains three complex tactic patterns, all on the same level. Rather than relating one to another through an extra pattern, these three relate with one another by interlocking at the extremities of their tactic patterns. As a single-level abstraction of interlocking relational patterns, then, the model is adirectional--indeed, the very concept of direction in such a system can only be tangentially applied to the communicative process itself, the relationship between the language system and the cognitive universe from which it is abstracted.

While this model promises to be extremely complex, it is in one respect simpler than the stratificational. Within its level structure, some strata and substrata of the latter model are abstractional while some are functional. For example, while most of the sememic stratum is an abstraction from the hypersememic stratum, the semonic (semiotic) level forms a functional transition between the sememic and the lexemic. Likewise, while the lexemic and part of the morphemic strata represent the abstraction of order, the morphonic (morphophonological) and the phonemic are functional, connecting the abstractional lexemic and hypophonemic strata. So long as such strata and levels are to be bidirectionally connected by a single realizational pattern, such mixing of level types in linear arrangement represents a disquieting aspect of the model, to say the least.

On the other hand, if we were to take the abstractional strata and levels of the stratificational model (roughly the sememic, lexemic, and hypophonemic) and relate them through networks arranged in a triangular order, rather than in a linear one, we would in effect create the other levels and strata at the intersections. Thus, a rough analogue of the single-level relational model for a linguist familiar with the stratificational model would be achieved by opposing all of the abstractional strata with one another through the functional strata.

In closing, I should like to point out that the relational model suggested here is complex, but it is complex only in the operation of the model itself. Insofar as the concept of language as a first-level abstraction is concerned, it is not only consistent with the behavioral aspects of language, but it should represent the simplest and most direct representation of language--the combinations of substance, order, and meaning. Given this consistence as a point of departure, consistence with the extreme complexities of language in actual operation should rather be expected and is certainly reflected in this relational model.

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DEEP AND SURFACE STRUCTURE UNIVERSALS

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German has the characteristic that it has an SVO order in main clauses but an SOV order in subordinate clauses, and it is partially for this reason that the language has been variously classified as SVO, SOV, VO becoming OV, OV becoming VO, and even, by at least one author, as VSO. It doesn't take much imagination to decide that something is wrong with any theory that allows such contradictory classifications of a single language. It is equally easy to decide where the problem lies, at least as far as German is concerned.

Greenberg's original classification of languages was based on the word order of the main clause of a statement, but many authors base their classifications on underlying or deep structure orders. Esau(1973) suggests that German is an OV language because it has a large number of word order patterns that are more characteristic of OV languages. He then posits a fronting rule to derive the main clause order from the subordinate clause order. Ross(1970) and Bach(1971) suggest an SVO order based not on the SVO order of the main clause, but on constraints on transformations.

Consider Vennemann's treatment of word order. Vennemann assumes that the main clause order of the simple statement provides the basic order of the sentence and claims that this order will generalize throughout the language through application of the principle of natural serialization¹. According to this principle, semantic elements in a sentence stand in an operator/operand relationship to each other and the elements receive their order according to the following rule:

$$(1) \quad \{\text{operator } \{\text{operand}\}\} \rightarrow \left\{ \begin{array}{l} [\text{operator } [\text{operand}]] \text{ in} \\ \quad \text{OV languages.} \\ [[\text{operand}] \text{ operator}] \text{ in} \\ \quad \text{VO languages.} \end{array} \right\}$$

The principle operates throughout the language and tends to bring all elements in the sentence into the basic order determined by the rule. When a child learns the language, he analogizes from the least marked sentence order, i.e. the statement, and generalizes this order throughout all operator/operand relation-

ships in the language, i.e. to all of the head/modifier configurations.² B-V applied this principle to German and determined that German is 1) a VO language, but with numerous OV characteristics; 2) destined to increase the number of VO characteristics, because the main clause word order will generalize by means of the principle of natural serialization.³ The B-V classification is especially interesting because although they base the classification on surface structure order, their choice for that order and their belief that VO characteristics will become more general in German, are based on the theoretical precepts that analogy tends to generalize from the least marked category in a paradigm and that the main clause order of the statement is the least marked sentence form. Thus B-V combine an explicit SS condition with an equally explicit rule in the underlying structure, a combination that would easily explain Greenberg's universals if the data were to check out.

Unfortunately the German data do not check out. The natural serialization principle is primarily a diachronic principle. It does not predict the order of elements in a given language at a given time, but only the direction of development of the word order in a language. But the main clause order of 16th century German was unquestionably SVO, so that the principle predicts an increase in VO characteristics. Lehmann (1971) has shown that there was an increase in OV characteristics in German beginning in the 16th century, including new postpositions and a new preposed relative clause formation. Thus the B-V principle clearly makes a false prediction about the developments in German word order during this period and so must be incorrect, at least as it is formulated by B-V.

It becomes apparent then, that the various classifications of word order in German are based on vastly differing concepts, and it is no wonder that the various investigations have yielded such contrasting results; the authors retained Greenberg's typological framework but changed the interpretation of the rules without explaining the implications of the changes that they made. As soon as one posits an 'underlying' word order, whether it agrees with the surface order or contradicts it, the rules change. When using the main clause order as a classificational criterion, one knows precisely what a typological classification means, but without a clear definition of what a DS classification is, there is no clear understanding of what the classification means or of which data are relevant in confirming the classification. In the remainder of this study I will examine the concept of word order typology and its relationship to the concept of DS. I will show that an underlying principle of word order is necessary and that

the implications of such a principle are primarily diachronic. Finally, I will try to relate this principle to an overall theory of word order in language.

Implicational and Diachronic Universals

Universals are usually stated in the form of an implication, such that the presence of a feature A in a language implies the presence of a second feature B, e.g. Ferguson has proposed the following universals:

- (2) i. No language has nasal vowels unless it also has primary nasal consonants.
- ii. In a given language the number of nasal vowels is never greater than the number of nonnasal vowel phonemes. (1963, 58)

As Greenberg has shown (1969), such implicational universals also have a diachronic impact. If the presence of the nasal vowel implies the presence of the nasal consonant, but not vice versa, then the nasal consonant must have been in the language first. Greenberg has claimed that "synchronic typologies function merely as heuristic...devices in defining the problems and in assembling the relevant data... The true regularity lies in the dynamic tendencies, that is, the diachronic universals"(1969, 194). Thus the synchronic state does not represent the universal itself, but rather the culmination of universal diachronic processes operating within the language. Ferguson has suggested a diachronic universal which corresponds to the synchronic universals in (2):

- (3) Apart from borrowing and analogical innovations, nasal vowels always result from the loss of a primary nasal consonant. (1963, 59)

A typical development is as follows: a vowel becomes nasalized; the consonant is lost and a contrast between nasal and oral vowels results. A comparison of (3) with (2) shows that the synchronic universals reflect the minimal conditions under which a change described in the diachronic universal can take place. For example, the condition that must hold for the development of nasal vowels is that there must be nasal consonants and oral vowels in the language. This condition is necessary, but not always sufficient, because some languages never develop nasal vowels. One never knows, therefore, when or even if the nasal vowels are going to develop.

The Diachronic Impact of Word Order Universals.

The dynamic impact of word order universals must be considered to be even greater than that of phonological universals. Some scholars seem to conceive of the word order universals as being associated with some

force that dictates a change toward one word order pole or another.⁴ An examination of the dynamic aspects of the universals indicates that some such word order principle must exist in order to account for the synchronic word order patterns.

Before proceeding to the implicational word order universals, I will discuss briefly the data upon which Greenberg's universals are based, since these data, even without reference to the universals, already reveal the presence of some kind of word order principle. Greenberg lists 24 groups of languages with various combinations of the features he discusses, e.g. the class of VSO languages with all postposed modifiers: VSO/N+Adj/Prep/N+Gen. As Hawkins points out (1976, 6), for some of the classes there are no language examples at all. Furthermore, most of the languages tend to collect in four groups, three of which represent the polar groups in Greenberg's classification, i.e. VSO or SVO with prepositions and postposed modifiers and SOV with postpositions and preposed modifiers. The fourth large class is the SOV group with postpositions and preposed modifiers, except for N+Adj. This concentration of languages into certain classes while other classes remain empty is far too regular to be accidental and it indicates that there must be some principle operating in language to account for it. If languages do tend to develop toward some word order patterns and away from others, then these directions of development must be predictable by the grammar, which means in turn that word order must be generated through some kind of rules or principles in the grammar. The German example indicates further that the order of the main clause is not always the first order to change. Thus if we posit the main clause order as the surface order, then if we want to account for the increased number of OV elements in German after 1600, it becomes necessary to posit a second rule in the grammar that generates the OV constructions.

It becomes apparent then that the word order patterns of Greenberg's data can only be accounted for through some underlying principle, that 'guides' or 'generates' the direction of word order change. Furthermore the order generated by this rule is not necessarily the order predicted by the surface classification of the main clause in the language.

When the implicational universals are brought into consideration, then the evidence becomes even stronger. Consider Greenberg's second, third and fourth universals (1963, 78):

- (4) Universal 2. In languages with prepositions, the genitive almost always follows the governing noun, while in languages with positions, it almost

always precedes.

Universal 3. Languages with dominant VSO order are always prepositional.

Universal 4. With overwhelmingly greater than chance frequency, languages with normal SOV order are postpositional.

By combining these three universal statements, we have the following implicational hierarchies:

- (5) VSO $\supset$ Prep $\supset$ Noun + Gen
 SOV $\supset$ Post $\supset$ Gen + Noun

A dynamic interpretation of the above implicational hierarchies suggests that the VSO configuration can develop only if the language has prepositions; the prepositions in turn can develop only if the genitive follows the noun. Presumably complete hierarchies can be set up which show the order of development of all of the relevant head/modifier configurations in the language.

Hawkins has carried out a thorough examination of Greenberg's universals and the data upon which the universals are based and as a result he has established not just one hierarchy, but a complete system of interacting hierarchies which organize the subtypes in Greenberg's data and prescribe the order of the typological changes which can take place (1976, 16):

- (6) i. (N+Num v N+Dem) $\supset$ N+Adj $\supset$ N+Gen $\supset$ N+Rel
 ii. Adj+N $\supset$ (Dem+N & Num+N) $\supset$ Rel+N $\supset$ Gen+N

One interesting aspect is that Hawkins has organized the hierarchies into two basic sets---one for SOV languages (6ii) and one for VSO languages (6i). Since a language must contain within its grammar some means of selecting the proper hierarchy and directing the change along that hierarchy, Hawkins' hierarchies confirm in effect my claim that some kind of DS word order rule must be necessary.⁵

But consider (6i) more closely. The rightmost element in this VSO hierarchy is the relative clause, which suggests that the relative clause position is the first change to take place in the development toward a VSO language. But to suggest that the relative clause position determines the basic word order pattern in the language is to suggest that a child has no basic word order pattern until the relative clause has been learned. It almost seems to be a case of the tail wagging the dog.

The existence of word order hierarchies without a syntax-external rule that determines the hierarchies also contradicts the patterns established in other types of universals. I have shown that the universal statements do not have a force in themselves; instead they

describe the conditions under which natural linguistic processes can take place. But if there is no external word order principle, then each subtype in the hierarchy must 'cause' the changes that take place in the adjacent subtypes, contrary to the situation in the other universals. In any case, some principle must be established that shows the head/modifier relationship in all of the various word order combinations. This relationship exists outside the syntax, not within it, so that evidence here points toward a non-syntactic rule operating within the sentence.

Once an ordering rule is established, it allows a new interpretation of the hierarchies. They do not represent the strength of elements influencing each other, but rather the susceptibility of the various elements to the word order rule. It is still not clear which factors in the language determine the basic word order, but it is probable that several factors work together. In any case it is clear that although the generalization is a special case of analogy, to resort to analogy alone is insufficient, since it cannot properly account for the hierarchical progression of the rule within language.

Thus there seems to be increasing evidence for positing some type of grammatical rule to account for the 'drift' of languages toward specific sets of word order patterns. I suggest that any attempts to classify the word order of a language according to its DS should refer to the order determined by this rule. But the effect, indeed the very necessity of the rule, is diachronic in nature, and it tends to generalize throughout the language as long as it is productive. For this reason, synchronic data are irrelevant when it comes to confirming the underlying word order of a language. DS order can only be confirmed through diachronic data.

Deep Structure Universals

The establishment of an active word order principle allows a more precise interpretation of word order change and word order universals, and I propose the following hypothesis about the processes that occur.

On the basis of a DS word order rule based on diachronic principles, the underlying order for German would appear to be SOV, since the diachronic evidence leans toward the SOV order.⁶ But if that is so, then how can one account for the SVO order of the main clause? Should we generate the main clause order from the subordinate clause order as Esau does? Or is it possible that there are actually two basic word order rules operating in German? I lean toward the latter solution; I suggest that there are two basic word order forces operating in language. One force is the

semantic word order rule, the other is a syntactic word order rule(or set of rules!). In most languages the two rules are basically in agreement, but in German they have established opposing orders in the surface structure.

The DS word ordering principle is an inherent part of the grammar. It is a universal of language acquisition and thus one of the first rules that a child acquires when it learns its first language. This DS principle establishes an underlying order of the head/modifier constructions in the child's grammar. But sometimes the head/modifier configurations in the language data do not all correspond to the underlying semantic order which the DS rule tries to impose upon his grammar. Where this happens, it becomes necessary to learn a syntactic ordering rule that will account for the aberrant forms in the grammar. Notice that under this hypothesis, the DS ordering rule is based on universal principles, whereas the syntactic ordering rules are language specific rules based on restricted surface data. Often they will represent non-productive constructions that will soon be eliminated. It is only seldom that they will set up opposing clause orders as has happened in German.

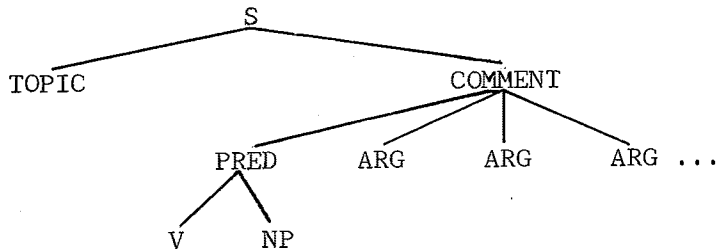
According to the word order principle, the language learner establishes a basic word order rule that controls the generation of new constructions in the language. When the new constructions disagree with the surface order, most of them are rejected by the speech community and language specific rules are established instead. Some forms establish themselves as alternates to the traditional forms and eventually become acceptable alternates within the community. When a form becomes acceptable to the community, it can spread very rapidly, as for example with the use of the English comparative form with more. When the author learned English grammar rules in high school, the more-forms, such as more beautiful, more ignorant, etc., were the exceptions to the rule that generated -er comparatives such as livelier, lovelier, and happier. In the current generation of speakers this rule appears to have completely reversed itself, so that more lively and more lovely are now the standard forms and the -er forms the exceptions.⁷

The DS word order principle does not just generate new forms--- it also affects the speaker's perception of old forms. German has a so-called separable prefix, which actually is an adverbial particle, that occurs at the end of the clause, as in the sentence: Er geht auf den Berg hinauf. Speakers now tend to incorporate the particle hinauf with the preceding prepositional phrase, yielding auf den Berg hinauf, a construction that can

be used independently: Auf den Berg hinauf will ich ja gar nicht gehen. From this form has developed another free form, den Berg hinauf, in which the adverb functions like a postposition: Den ganzen Berg hinauf hat er kein Wort gesprochen. This process represents a change in the perception of the construction, whereby the hearer has associated the surface form with a new underlying structure, a structure which then allows him to generalize the surface form into new environments.

One last word on word order in general. B-V claim that the natural serialization principle determine order of virtually all the elements in the sentence. This claim, I believe, is wrong. I suggest that word order forces in language operate at at least three levels, as in (7):

(7)



The topic and comment order is well recognized and requires no further comment, except to suggest that it appears to be neutralized by what Givón has called syntacticization. The second word order force operates between arguments of the verb, i.e. basically between the cases in the Fillmorean sense. The DS rule that I have discussed operates primarily within the arguments themselves, but is also a semantically based rule. Such semantically based word order rules appear to provide the 'inherent' principles of word order that operate in language and in language acquisition, principles that are replaced by and integrated with the language specific syntactic rules to form the language of the adult. In the short term the syntactic rules prevail, but in the long term situation, the semantic rule will assert itself.

I have oriented this paper primarily around theory and methodology, moving from a data based universal to a hypothesis about the processes involved in word order change and the generation of word order in language. What I have tried to do is to understand the relationship between the various components of grammar, both to each other and to the data they are supposed to describe. Perhaps by achieving such understanding we will at

least know which data to use in evaluating the hypothesis.

FOOTNOTES

¹ The natural serialization principle is generally attributed to Vennemann (Kahr, 1976, 221; Hawkins, 1977) and certainly he has done the work on linguistic typology. But the principle is an integral part of the natural generative grammar described in Bartsch-Vennemann (B-V). Vennemann (1973a, 41) specifically acknowledges that Bartsch originated the principle.

² Vennemann originally proposed the principle of the generalization of the unmarked base form for his natural generative phonology. See Vennemann (1972b) for specific applications to syntax and phonology.

³ B-V are not completely dependent upon theoretical arguments to support the SVO classification of German. Vennemann also cites the use of main clause order in subordinate clauses in modern colloquial German (1973b). The SVO subordinate clause order, however, is balanced by other evidence that German is generalizing a preposed genitive construction (Barnes, 1977). The preposed genitive should weigh more heavily as evidence according to Greenberg's universals ((4)), which indicate that the genitive order precedes the subject/verb order in language change.

⁴ See esp. Lehmann (1971), Esau (1973) and Barnes (1977) for a discussion of German. Barnes (1977) bases the OV classification on the diachronic nature of the DS classification, but only B-V and Vennemann define the principle explicitly, i.e. the natural serialization principle.

⁵ This claim is my interpretation and not Hawkins'. According to my reading of Hawkins' work, he would reject this interpretation, at least before reading this essay.

⁶ Hans Heinrich Lieb has pointed out evidence that German is definitely gaining in SVO orders. But notice that the classification of German at the present time is really a separate question, although I still tend to believe German is SOV. The point is, something has to account for the changes after 1600. See Barnes (1977).

⁷ It is possible (probable?) that the more rule was active in the language already at that time and that I followed the teacher and used the archaic -er rule.

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